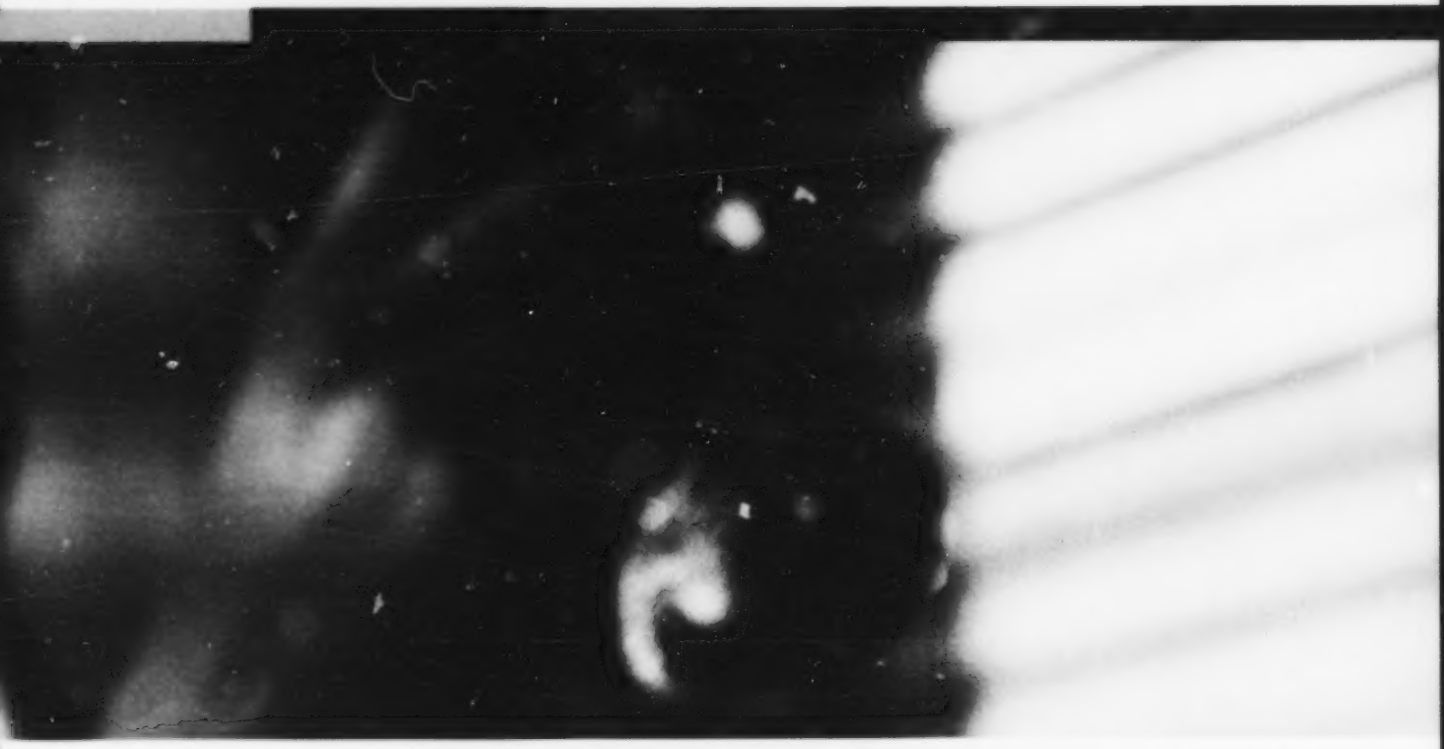
Alcohol Indicators Report



A framework of alcohol indicators describing the consumption of use, patterns of use, and alcohol-related harms in Nova Scotia

NOVEMBER 2005

NOVA SCOTIA
Health Promotion
Addiction Services

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Addiction Services

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A framework of alcohol indicators describing the consumption of use, patterns of use, and alcohol-related harms in Nova Scotia

NOVEMBER 2005

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Foreword

Alcohol is without doubt still Canadians' favourite recreational drug. As shown in this excellent report, three-quarters of Nova Scotians are current drinkers of alcohol. Sadly, however, there is also a nasty hangover with as many as 1149 deaths and several thousand hospital admissions in Nova Scotia between 1999 and 2003 being estimated to have been caused by excess alcohol use.

I recommend this report to anyone wishing to be informed about alcohol, public health, and public safety in Nova Scotia as well as to anyone wishing to see an example of a careful and thoughtful synthesis of available data on this important topic.

The methods used draw heavily from international recommendations promoted by the World Health Organization. A set of well-thought thorough recommendations for future monitoring of this problem in Nova Scotia is also provided, which I hope will be complemented by similar efforts on the west side of Canada! Too often social and health policy is made without any commitment to accountability and evaluation. This report lays out a blueprint for not only identifying the seriousness of alcohol-related problems, but for monitoring progress in future community responses to these. Much of what works in the way of effective prevention policy in this area has to be implemented locally and regionally. I therefore commend this report to the policy makers of Nova Scotia whether they be from health, policing, road safety, finance, child and welfare, education, or any other sectors impacted in some way by alcohol-related problems and hope that it will help to lay the foundations for effective policies in the years ahead.

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Alcohol Indicator Report:
Executive Summary

In this document, the term "Nova Scotians" refers to all Nova Scotians 15 years of age and older, unless otherwise specified.

The Alcohol Indicators Report for Nova Scotia provides a framework for a provincial monitoring system comprised of alcohol indicators that are direct and/or proxy measures of alcohol use and related harms. A major goal in the dissemination of the alcohol indicators report is to inform key stakeholders, at the provincial, regional, municipal, and community levels, of the significant health, economic, and social costs of alcohol-related harms in Nova Scotia and the pressing need to recognize this issue as a priority for action. The report is intended to provide current information to decision-makers in the health, enforcement, education, and alcohol industry sectors, to help target future policies and programs that effectively prevent and/or reduce the harms and consequences associated with alcohol use. The report focuses on the adverse harms of medium to high-risk drinking rather than any potential beneficial effects of low-risk drinking.

The report is framed around the World Health Organization's (WHO) recommendations for alcohol indicators best practices. It includes a brief look at the status of alcohol use in Canada and a comprehensive synopsis of alcohol use in Nova Scotia, largely based on findings from a number of prevalence studies. Using the most recent data sources available, this report includes: estimates for per capita consumption among Nova Scotians aged 15 years and older; patterns of use (never used, former, and current users), high-risk drinking, non-compliance with low-risk drinking guidelines; and alcohol-related harms, including alcohol-related incidents of traffic offences, treatment, morbidity, mortality, and self-reported harm from one's own use and from others' use of alcohol.

Key findings for Nova Scotia

ALCOHOL CONSUMPTION

- For the fiscal period 1999-2004, Nova Scotians consumed, on average, 7.57 litres of pure alcohol per year.
- The Nova Scotian overall consumption of pure alcohol (7.57l) for the fiscal period 1999-2004 was slightly lower than the overall Canadian rate of 7.76 litres for the years 2000-2004.

PATTERNS OF USE

- 74.0 - 80.7% of Nova Scotians are current drinkers, 5.4 - 10.4% have never drank and 13.8 - 16.9% are former drinkers.
- Men (80.5 - 82.9%) are more likely to be current drinkers than women (71.5 - 78.8%).

- Nova Scotians aged 60 years and older (55.5 - 64.7%) were least likely to be current drinkers.
- Adults (25-29 years) had the highest current drinking rates at 90.9 - 91.1% followed by young adults (19-24 years) at 89.2 - 92.3%.
- The average number of drinks consumed for all drinkers at a sitting was 3.2 drinks[A]. Seniors consumed the least at a sitting (1.9 drinks) and young adults the most at 5.5 drinks per sitting.
- 51.7% of students (male and female) in grades 7, 9, 10, and 12 consumed alcohol in 2002.

HEAVY DRINKING

- 3 - 5.8% of Nova Scotians drink heavily every week.
- 17.5 - 20% of Nova Scotians drink heavily at least once a month.
- The rates for heavy drinking are particularly high for underage drinkers, young adults, men, and those who have never been married

HIGH-RISK DRINKING

- 1 in 5 current drinkers or about 117,144 Nova Scotians are high-risk drinkers, meaning they attained a score of 8 or higher on the AUDIT.
- Underage drinkers, young adults aged 19-24, men, and those who have never been married are more likely to be high-risk drinkers as defined by the AUDIT.

LOW-RISK DRINKING GUIDELINES

- In studies conducted in 2003-2004, 3.0 - 17.7% of Nova Scotians exceeded the daily and weekly gender specific low-risk drinking guidelines.
- Among current drinkers in the 2004 Canadian Addiction Survey, young adults had the highest rate of non-compliance with the low-risk drinking guidelines at 49.1%, followed by adolescents 15-18 years old at 26.8%. Noncompliance in the 2003 Nova Scotia Gambling Prevalence Study was reported at 8.1% among young adults aged 19-24 years.

The majority of Nova Scotians drink alcohol. Males and those aged 19 to 29 years have the highest drinking rates, while Nova Scotians aged 60 years and older the lowest. A high percentage of Nova Scotians drink heavily weekly (3 - 5.8%) and monthly (17.5 - 20%). One in 5 current drinkers in Nova Scotia were identified as high-risk for hazardous alcohol consumption, harmful alcohol use patterns and/or alcohol dependence. Underage drinkers, young adults, men, and those who have never been married were most likely to be identified as heavy and/or high-risk drinkers. In addition, 3 - 17.7% of Nova Scotians exceeded the low-risk drinking guidelines for avoidance of acute and chronic alcohol-related harm.

The following alcohol consumption statistics were based on survey estimates. Using survey data, per capita consumption was calculated at 32.1% of the actual rate (2.5 litres of pure alcohol). Therefore when interpreting the following sections it is important to remember that if consumption is severely underestimated using survey data, perhaps patterns of use and harms are also underestimated.

Depending on the data source used, heavy drinking is usually defined as consumption of 5 or more drinks for either sex, or, 5 or more drinks for men and 4 or more drinks for women at a sitting.

The Alcohol Use Disorders Identification Test (AUDIT) is a tool used to identify hazardous consumption, harmful alcohol use patterns, and alcohol dependence.

To avoid acute and chronic alcohol-related harms, low-risk drinking guidelines developed in Ontario[17] recommend that individuals consume no more than two standard drinks per day with weekly limits of 14 standard drinks for men and 9 for women.

[A] A drink in this document refers to a standard drink in Canada which is a beverage containing 13.6 g of pure alcohol. Each of the following is representative of a standard drink containing 13.6 g of alcohol: one bottle or can of beer (12 oz/341 ml of regular strength beer - 5% alcohol), one glass of wine (5 oz/142 ml of wine - 12% alcohol), one drink or cocktail with one and a half ounces of liquor (1.5 oz/43 ml of spirits - 40% alcohol).

Alcohol-related harms

MORBIDITY AND MORTALITY:

- From 1999-2003, approximately 3000 admissions (3 - 3.4% of all admissions) to hospitals in Nova Scotia each year can be attributed to alcohol.
- Alcohol-related male to female admissions were 2:1.
- From 1999-2003, 1149 deaths in Nova Scotia can be attributed to alcohol use.
- Liver disease accounted for 348 alcohol-related deaths (30% of all alcohol-related deaths).
- Alcohol-attributable cancer deaths accounted for 232 deaths (20% of all alcohol-related deaths).
- Deaths from alcohol-related motor vehicle crashes, suicide, and falls accounted for a further 33% of all alcohol-related deaths (382 deaths).
- Alcohol was a factor in 163 motor vehicle fatalities in Nova Scotia between 1999 and 2003.
- In 1999, the ratio of alcohol-related mortality to all-cause mortality was 3.3%. Since then, it has remained stable at 2.8 - 2.9% of all-cause mortality in Nova Scotia.
- An estimated 403 babies born in Nova Scotia between 1999 and 2003 were affected by prenatal exposure to alcohol.

For the five-year period 1999-2003, about 3000 hospital admissions a year can be attributed to alcohol use in Nova Scotia, with men twice as likely as women to be admitted for alcohol use. During the same time period, 1149 deaths can be attributed to alcohol use in Nova Scotia with liver disease, alcohol-related cancers, motor vehicle crashes, suicide, and falls accounting for 83% of all alcohol-related deaths in Nova Scotia.

When interpreting alcohol-related offences data, it is important to note that differences observed in the frequency of alcohol-related offences over time may be a result of changes in enforcement practices rather than alcohol-related behaviours.

ALCOHOL-RELATED OFFENCES

- The Nova Scotia (235) and Canadian rates (242) per 100,000 population for impaired operation of a motor vehicle over 80mg were similar over the five year period 1999-2003.
- During the same period, the incidents of impaired operation of a boat, vessel, or aircraft causing bodily harm of 2.2/100,000 in Nova Scotia were almost double the overall Canadian rate of 1.2/100,000 a year.
- There has been a substantial reduction in incidents of failing or refusing to provide a breath sample over the past 5 years. The

number of actual incidents has decreased from 454 in 1999, to 197 in 2003. This may be due to changes in enforcement practices rather than dramatic changes in behaviour.

- In 2003-2004, 7.5% of Nova Scotians drove a motor vehicle after consuming two or more drinks in the previous hour and 11.5% of Nova Scotians reported being a passenger in a motor vehicle driven by someone under the influence of alcohol.
- Among licensed students, 14.8% reported driving within an hour of consuming two or more drinks and 6.6% of all students regardless of licensing status reported the same behaviour. In addition, 22.8% of students reported being a passenger in a vehicle driven by someone under the influence of alcohol in the prior year.
- There were 366 charges laid pertaining to Section 89 of the Nova Scotia Liquor Control Act, dealing with the sale or serving of alcohol to minors, from 1999-2003.
- In that same period, there were a total of 14,410 offences throughout Nova Scotia under Section 87 of the Nova Scotia Liquor Control Act, pertaining to public intoxication.

The Nova Scotia rate for impaired operation of a motor vehicle over 80mg was 235 per 100,000 population over the five year period 1999-2003. During that same period, the number of incidents of failing or refusing to provide a breath sample decreased from 454 in 1999, to 197 in 2003.

In 2003-2004, 7.5% of Nova Scotians reported driving a motor vehicle after consuming two or more drinks in the previous hour and 11.5% of Nova Scotians reported being a passenger in a motor vehicle driven by someone under the influence of alcohol. In 2002, 6.6% of all students reported driving within an hour of consuming two or more drinks and 22.8% of students reported being a passenger in a vehicle driven by someone under the influence of alcohol.

SELF-REPORTED HARMS

- In 2003-2004, 8.6% (47,871) of current drinkers (15 years of age and older) reported one or more harms from their own use of alcohol.
- Harm from their own drinking impacted most on their physical health, friendships, and social life.
- Nova Scotians who drank heavily once a month or more (consumption of 5 or more drinks for men and 4 or more drinks for women at a sitting) were 7 times more likely than non-heavy drinkers to report one

or more harms from their own use of alcohol, and those who drank heavily every week were 8.5 times more likely to report harms.

- Almost twice as many men (11.4%) than women (5.8%) reported harm from their own use of alcohol.
- In 2003, an estimated 9,378 Nova Scotians aged 19 and older reported they had a problem with the amount of alcohol they consumed or what happens when they drink.
- An estimated 237,270 Nova Scotians 18 years and older have been harmed by another's use of alcohol. The most frequently reported harms were: being insulted or humiliated, being verbally abused, and being involved in a serious argument with a drinker.
- Among students in grades 7, 9, 10 and 12 in Nova Scotia, 30.5% reported experiencing at least one alcohol-related problem (56.0% among current drinkers), with 11% reporting three or more problems.

Many Nova Scotians experience harm from their own use of alcohol (47,871) or from someone else's use of alcohol (237,270). Men and those who drink heavily are much more likely to report harm from their own use of alcohol. Among students in grades 7, 9, 10, and 12 in Nova Scotia, 30.5% reported experiencing at least one alcohol-related problem.

When interpreting alcohol-related treatment statistics, it is important to note that differences observed in treatment rates over time can be impacted by participation as well as changes in capacity (e.g. number of beds available, staffing), admission policies, and public awareness of programs and services. For example, in 2002, the Province of Nova Scotia enhanced prevention and treatment programs and services for youth and women at risk for, and/or experiencing, substance use related problems. Therefore, one might expect an increase in the number of youth and women participating in prevention and treatment programs after 2002.

TREATMENT

- Nova Scotians reporting alcohol use at treatment program intake has increased by 14.7% from 5,883 in 2000 to 6,749 in 2004.
- The ratio of males to females accessing treatment programs is about 3:1.
- The majority of Nova Scotians who seek treatment report multiple substance use (77.1% of women and 71.1% of men).
- One year after receiving treatment, 83.4% report no use or less use of alcohol.
- From 2000 to 2004, adolescents seeking treatment increased steadily: 625 adolescents in 2000 compared to 804 in 2004.
- During that period, the ratio of male to female attendance for adolescents has maintained at approximately 2:1.
- Most adolescents also use other substances, about 23% reported use of one other substance and 71% reported use of two or more drugs.
- One year after treatment, 77.8% of adolescents reported no use or less use of alcohol.

- AUDIT scale scores indicate that among current drinkers 15 years and older in Nova Scotia, 105,880 Nova Scotians may require brief interventions of advice or education and 7,885 may require brief interventions of advice, education, counselling, and follow-up to reduce risks associated with their use of alcohol. A further 3,379 Nova Scotians may require treatment for alcohol dependence.

From 2000 to 2004, Nova Scotia adults reporting alcohol use at treatment program intake increased by 14.7%. Over the same five-year period, the number of adolescents who sought treatment for alcohol use increased steadily. Most Nova Scotians, adults and adolescents, who seek treatment report multiple substance use. After treatment, most attendees reported no or less alcohol use.

Recommendations

Recommendation 1

The findings from Alcohol Indicators Report should be communicated to key decision-makers throughout Nova Scotia.

The Alcohol Indicators Report is a comprehensive synopsis of current alcohol use and related harms in Nova Scotia. The findings from this report should be communicated to key decision-makers at the provincial, regional, municipal, and community levels, in health, enforcement, education, alcohol industry, and other sectors impacted by alcohol-related harms. The information from the report will help inform future policy initiatives and activities targeted at preventing and/or reducing alcohol-related harms.

Recommendation 2

A comprehensive alcohol strategy for Nova Scotia aimed at reducing harmful alcohol use and associated harms should be initiated.

This report should serve as the framework upon which Nova Scotia Health Promotion initiates a comprehensive strategy designed to reduce alcohol-related harms in collaboration with provincial and regional partners and stakeholders. Such a strategy should attend to best practices and incorporate both population health approaches and harm reduction interventions targeted at the most harmful patterns and contexts of alcohol consumption. A population health approach encompasses such policies as alcohol pricing, taxation, and modifying access to alcohol. The strategy should identify harm reduction interventions targeting individuals involved with high-risk drinking patterns (e.g. 5 or more drinks per

drinking occasion) and include recommendations for the prevention of acute harms (e.g. unintentional injuries) while not impacting on any potential health benefits of moderate alcohol consumption.

Recommendation 3

The Alcohol Indicators Report should be repeated in Nova Scotia on a three-to-four year cycle.

The Alcohol Indicators Report should serve as the framework for a provincial monitoring system comprised of alcohol indicators that are direct and/or proxy measures of alcohol use and related harms in Nova Scotia, making it possible to observe trends over time, make comparisons, and measure the impact of policies and strategies. It is recommended that the report be prepared on a three-to-four year cycle.

Recommendation 4

Further research should address the full impact of alcohol-related harms, including the context of high-risk drinking and the cost impact of alcohol on Nova Scotians.

The Alcohol Indictors Report is a significant step towards improving the state of knowledge and understanding about the scope of harms associated with alcohol use in Nova Scotia. The full report identifies a number of opportunities to improve that knowledge, which should be considered in future reports, for example using physician billing to further explore alcohol-related morbidity. Ongoing research could address such gaps as exploring the types of beverages most related to acute and chronic harms in Nova Scotia and exploring the context of alcohol use among those experiencing alcohol-related harms. Finally, the cost impact of alcohol use on Nova Scotians needs to be updated to more accurately reflect the direct and indirect costs associated with harmful use.

Alcohol Indicator Report:

Introduction

The economic, social, and health costs of alcohol to Nova Scotia are enormous. In 1992, it is estimated that the costs of alcohol to the Nova Scotia economy was $240 million dollars.[1] These are direct government-incurred estimates of costs that exclude the economic costs to the community as well as those incurred by the individual using alcohol. Alcohol also significantly impacts on relationships and families incurring both tangible and intangible costs as a result of alcohol-related death, pain and suffering.[2,3] In this era of fiscal restraint, it is essential to systematically examine the context of the adverse consequences and harms of alcohol use, and bring this information forward to key provincial, regional and community-based decision-makers, particularly those in health, education, enforcement, and alcohol industry sectors. It is important that this information be comprehensive, accurate and easy to interpret, so as to increase the likelihood that the information is a catalyst for future policy initiatives and activities targeted at preventing and/or reducing alcohol-related harms. The methods used to determine the information should be rigorous and previously tried and tested elsewhere. The purpose of this alcohol indicators report is to provide a comprehensive overview of alcohol use and related harms in Nova Scotia.

This report will provide a framework for a provincial monitoring system comprised of alcohol indicators that are direct and/or proxy measures of alcohol use and related harms. The alcohol indicators framework for Nova Scotia is based on standards developed by the World Health Organization (WHO).[4] In using standardised alcohol indicators, trends over time can be observed, comparisons can be made, and the impact of strategies can be determined. It is anticipated that the report will serve as baseline for future policy and strategy development and evaluation. For example, this report will serve as the evidentiary framework upon which Nova Scotia Health Promotion will lead the development of a comprehensive strategy to reduce alcohol-related harms in collaboration with provincial and regional partners and stakeholders. The report will focus on the adverse harms of medium to high-risk drinking rather than any potential beneficial effects of low-risk drinking.

A major goal in the dissemination of the alcohol indicators report is to inform key decision-makers at the provincial, regional, municipal, and community levels of the significant health, economic, and social costs of alcohol-related harms in Nova Scotia and the pressing need to

recognize this issue as a priority for action. The report is intended to provide current information to policy-makers in the health, enforcement, education, and alcohol industry sectors, to help target future policies and programs that effectively prevent and/or reduce the harms and consequences associated with alcohol use.

In the past policy-makers have implemented some population-based strategies to reduce alcohol-related harms.[5,6] Population-based strategies are effective, broadly applied and relatively easy to implement. The population health approach encompasses such policies as alcohol pricing, taxation, and modifying access to alcohol. Harm reduction is an alternative and complementary approach to reducing alcohol-related harms.[5,6] Harm reduction strategies target individuals involved with high-risk drinking patterns (e.g. binge drinking) and the prevention of acute harms (e.g. unintentional injuries) while not impacting on any potential health benefits of moderate alcohol consumption. The harm reduction approach may involve novel strategies to reduce alcohol-related problems without requiring abstinence, such as opening retail outlets early to reduce the consumption of non-beverage alcohol or using glassware that breaks into dust-like particles rather than shards in drinking establishments to prevent injuries in bar room brawls.[5]

Alcohol indicators - Best practices

An alcohol monitoring system should be comprised of alcohol indicators that are direct or proxy measures representative of alcohol consumption, patterns of use, harms including alcohol-related morbidity and mortality, police and legal encounters, violence, work, and social consequences.[4] The best data sources to determine consumption and patterns of use are sales and survey data.[4] Harms are best identified through the use of administrative data (health statistics), crime reports, motor vehicle accident data, and surveys.[4] Ideally indicators created from these sources will be based on standardized measures using pre-existing sources that allow the system to be updated on a regular basis. Unfortunately these data sources or indicators for an alcohol monitoring system are not always easily accessible or in a usable format. If accessibility or feasibility are issues, data should be collected and indicators created using previously validated tools or methods developed following the WHO guidelines or other reputable source.

Per capita consumption

Per capita consumption can reliably be used as an indicator of the volume and changes over time of alcohol related harms.[4] Changes in per capita consumption have been shown to be associated with changes in the levels of alcohol-related harm.[3] Specifically associations have been observed between increased consumption of alcohol and higher rates of liver cirrhosis, pancreatitis, accident death rates, suicide, murder, and all-cause mortality.[3,7,8] Studies have also shown that mean consumption is strongly correlated with heavy drinking and that median consumption is a predictor for both heavy and problem drinking.[3] Although most studies have observed an association between increased consumption and harms, a recent Canadian study showed that impaired driving rates actually fell during a period of stable consumption levels.[6] Current evidence does not support a link between increased per capita consumption and decreased mortality from heart disease.[3]

The most accurate data source to determine adult per capita consumption rates (aged 15 years and older) is retail sales data.[4] Government retail taxation data is another good data source, however, because of lag time, wholesale and production taxes are less suitable for determining consumption levels. Although sales and tax data are good sources to determine consumption, users of these data must be aware that not all alcohol purchased in a given time frame is consumed in the same time period, in addition sales to specific groups may not be captured e.g. First Nations' communities, military bases. The WHO recommends per capita consumption estimates be calculated for at least the most commonly consumed alcohol beverages in the province (based on type and alcohol content of drinks) and in particular for those beverages popular with high-risk drinkers.[4] Sales of beverages preferred by high-risk drinkers, specifically regular strength beer, have proven to be associated with alcohol-related harms.[4]

When using per capita consumption estimates, consideration should be given to what is excluded in the estimate such as home brew, duty-free purchases, consumption elsewhere, industry stockpiling, and waste.[4] Estimates derived from survey data are generally low, 40-60% of the actual rates.[4] However, survey questions are useful when determining consumption from non-traditional sources e.g. duty-free purchases and home brew, drinking types (never, former or current drinkers) and patterns (e.g. low, medium, high-risk drinking).[4] If comparisons to other populations are anticipated, it is also useful to know abstinence rates for the different populations.[4]

In the International Guide for Monitoring Alcohol Consumption and Related Harms the WHO provides several formulae to calculate per capita consumption based on available data. The most comprehensive formula includes all possible sources of alcohol consumption for the entire population aged 15 years and older as well as potential exclusions to the total[4]:

$$\frac{\begin{array}{c}\text{Alcohol production}\\ \text{Alcohol imports}\\ \text{Informal alcohol production}\\ \text{Consumption overseas}\\ \text{Duty-free consumption}\end{array} - \begin{array}{c}\text{Tourist consumption}\\ \text{Alcohol exports}\\ \text{Alcohol re-exports}\\ \text{Additional Stocks}\end{array}}{\text{Population 15 years of age and over}} = \text{Per Capita Consumption}$$

To determine per capita consumption alcohol production, trade or sales values must be converted into litres of pure or absolute alcohol according to the concentration of alcohol in a beverage type. Strength of alcohol can be reported as alcohol proof or a percentage of pure alcohol by volume or by weight.[4] To convert alcohol by volume to pure alcohol, multiply volume by alcohol content (Table 1), e.g. 30 litres of wine x 0.12 = 3.6 litres of pure alcohol. To convert pure alcohol by volume to weight, multiply pure volume content by 0.79 (specific gravity of alcohol), 1 ml of ethanol = 0.79g. For beverages other than beer, alcohol proof is often used to denote alcohol strength (% alcohol by volume x 2 = proof).

TABLE 1
Average alcohol strength by beverage in Canada[5,10]

Type of beverage	Pure alcohol content (volume)
Wine	12%
Spirits	40%
Beer	5%
Wine coolers	6%

Some beer consumed in Canada has higher alcohol content than a standard drink and others (light) are lower. The WHO recommends that alcohol tax be based on alcoholic strength and content.[4] Besides being sound public health policy, this strategy would assist in monitoring per capita consumption.[4] Beer, wine, and spirits purchased in Nova Scotia are subject to a 15% harmonized sales tax (HST) and Federal Excise Duty (FED). The rate in which the FED is applied varies according to the strength of alcohol content: the higher the alcohol content, the higher

the FED.[11] The FED does not apply to sales of home brewing and wine kits, duty-free purchases, or alcohol sales on First Nations reserves and military bases. The provincial HST is based solely on the price of the alcohol purchased.

Based on available data the following are the formulae used to estimate per capita consumption by volume and litres of pure alcohol for Nova Scotia:

$$\textit{Litres per year} = \frac{\textit{Litres sold of a specific beverage type in a year (e.g. wine)}}{\textit{Population 15 years and older}} = \text{Per Capita Consumption by Volume}$$

$$\textit{Litres per year of pure alcohol} = \frac{\textit{Volume of alcohol sold } x \textit{ \% alcohol of specific beverage}}{\textit{Population 15 years and older}} = \text{Per Capita Consumption of Pure Alcohol}$$

Patterns of use

Comprehensive information about patterns of alcohol use in a population is important in the development of policies directed at minimizing alcohol-related harms.[4] Adult per capita consumption provides only minimal information in determining patterns of drinking. Sales data can provide some information on variations in patterns of use as certain types of alcohol, such as regular strength beer, are generally preferred by high-risk drinkers.[12] Survey data, however, can provide information on: consumption not captured by sales data (e.g. amount of home brew consumed), drinking status (abstainer, former, or current drinker), drinking patterns (occasional, weekly, monthly, low/high risk consumption), prevalence of alcohol-related harms (e.g. impact of drinking on relationships, injury, unplanned sexual intercourse) and characteristics of problem drinkers (e.g. age, gender, SES).

SURVEY SAMPLING AND METHODS

Important issues to consider when conducting a population-based survey are sample size, the sampling frame and the representativeness of the sample.[4] Careful consideration should be given to selection of the sampling frame as certain important subgroups may be missed e.g. youths, Aboriginals, pregnant or nursing women, or the homeless. Mode of interview is also a factor: telephone, personal interview, or self-administered mail-in questionnaires. Self-administered questionnaires generally result in higher estimates of consumption, however, if not preceded by telephone contact, response rates are generally very low. Non-response, which can be an issue in calculating

estimates, can be addressed ensuring confidentiality of responses, frequent call-backs, financial incentives for participation and weighting responses. Survey data should also be weighted to account for probability of inclusion in the sample. All alcohol survey instruments used should be tested for reliability and validity.

The principal methods (Table 2) used to determine alcohol intake are Quantity-Frequency (QF), Graduated Quantity Frequency (GQF), and Last 7 Days.[4] The QF method relies on only two questions: usual amount consumed and frequency of drinking. The QF method can be expanded to cover specific beverage types if a lead-in question asking about types of beverages consumed in a time period is used. The GQF method employs questions to determine the frequency of consumption of specific amounts of alcohol - How many days in the time period did you consume 12 or more drinks (8 but not more than 11, 5 but not more than 7, 3 but not more than 4, 1 but not more than 2)? The Last 7 Days method (report of all drinking on each of the last 7 days) can provide higher consumption estimates due to better recall and the ability to detect consumption from alternative sources (e.g. home brew) but is susceptible to misrepresentation if administered during a holiday season and may miss the occasional drinker entirely. The answers to the questions are then used to calculate respondents' total, average, and heaviest consumption of alcohol (see example Table 3).[4] A reference period of one year is recommended when determining drinking patterns. Although less sensitive to changes in drinking patterns than a shorter duration, the one-year time period usually coincides with the time frame used in measures assessing alcohol-related harms. Of the three methods, Rehm et al found the GQF method best when determining prevalence of high-risk drinkers and abstainers (see Table 3).[13]

TABLE 2
Principal methods used to determine alcohol intake[4]

Method	Questions used to determine alcohol intake
Quantity-Frequency (QF)	Questions are asked regarding how much and how often alcohol is usually consumed (can be general or type specific if a lead in question is used). For example: In the past year did you drink any wine? How often in the past 12 months did you drink wine? On days when you drank wine how much did you usually drink? What size of wine glass did you usually consume on days you drank wine? In the last 12 months, what was the largest number of glasses of wine consumed by you in a day? How often in the last 12 months did you drink (largest number) glasses of wine?
Graduated Quantity-Frequency (GQF)	After asking the maximum number of alcoholic beverages consumed in a day (e.g. 12 drinks) survey respondents are asked how often they drank that amount. They are then asked how often they consumed smaller amounts (8 but not more than 11 drinks, 5 but not more than 7, 3 but not more than 4, 1 but not more than 2).
Last 7 Days	Questions are drink specific: How many glasses of wine did you drink on Sunday? What size were the glasses? Questions are repeated for each type of beverage (e.g. beer, spirits) and each day of the week.

To estimate consumption, in addition to collecting data relating to the amount consumed and frequency of consumption, information is also needed about the size of drink container (oz/ml) and the strength of alcohol of a particular beverage. The most practical approach to ensure consistency in interpreting survey results is to supply respondents with a definition of a standard drink. A standard drink in Canada refers to a beverage containing 13.6 g of pure alcohol.[4] Each of the following is representative of a standard drink containing 13.6 g of alcohol: one bottle or can of beer (12 oz/341 ml of regular strength beer - 5% alcohol), one glass of wine (5 oz/142 ml of wine - 12% alcohol), one drink or cocktail with one and a half ounces of liquor (1.5 oz/43 ml of spirits - 40% alcohol).[9]

Heavy drinking

In Canada, the definition of heavy drinking varies. In the Canadian Community Health Survey (CCHS) heavy drinking is defined as the consumption 5 or more drinks at a sitting at least monthly over the prior year or regular consumption of more than 12 drinks a week.[29] In the 2004 Canadian Addiction Survey (CAS) heavy drinking is also defined in a few different ways by amount and frequency, and by amount, frequency and gender.[2] Heavy infrequent drinking is defined as

consumption of 5 or more drinks of alcohol less than once a week while heavy frequent drinking is defined as 5 or more drinks once a week or more. These definitions are identical for males and females. In contrast, heavy drinking is defined as 5 or more drinks for men and 4 or more drinks for women at a sitting once a week or once a month or more. In the 2002 Nova Scotia Student Drug Use Survey (SDUS), heavy drinking refers to 5 or more drinks at a sitting.[32] The SDUS also assessed self-reports of drunkenness in the 30 days prior to the survey.

TABLE 3

Calculation of alcohol consumption and risk level using the Graduated Frequency Method*

Example: A female survey respondent reported that the largest number of drinks she consumed in a day during the past year was 9; she drank between 8-11 drinks twice in the past year, 5-7 drinks once a month, 3-4 drinks 2 to 3 days a month, and 1-2 drinks 3-4 days a week.

The midpoint of the time frequencies must be converted to days per year: once a month = 12, 2-3 days a month = 2.5 x 12 = 30, 3-4 days per week = 3.5 x 52 = 182.

The midpoint of the quantity frequencies are then determined: largest number of drinks reported by respondent was 9, midpoint of 8-9 is 8.5, midpoint of 5-7 drinks is 6, of 3-4 drinks is 3.5, and 1.5 for 1-2 drinks.

Note: A standard drink in Canada is set at 13.6 g.

Number of drinks		Number of days consumed this amount		Converted to grams		
8.5	x	2	x	13.6	=	231.2 g
6.0	x	12	x	13.6	=	979.2 g
3.5	x	30	x	13.6	=	1428.0 g
1.5	x	182	x	13.6	=	3712.8 g
				Total	=	**6351.2 g**

In the past year, the respondent consumed 6351.2 g of alcohol. Her average daily intake was 6351.2/365 = 17.4 g and on the days she consumed alcohol her average intake was 6351.2/226 = 28.1 g

According to the international standards for low, medium and high risk drinking this respondent would be considered a medium risk drinker as her average consumption is between 21-40 g on drinking days.

However, this individual also partakes in some high risk drinking with consumption in excess of 41 g on certain days. This individual also occasionally exceeds the low-risk drinking guidelines developed in Ontario (see next section) as there are days when her consumption exceeds two standard drinks (27.2 g).

* Adapted from World Health Organization: Dept of Mental Health and Substance Dependence. International Guide for Monitoring Alcohol Consumption and Related Harm. Geneva: World Health Organization; 2000.

High-risk alcohol use

The international cut-point for high-risk drinking for acute harm is recognized as consumption in excess of 60 grams per day for men.[4] The likelihood of experiencing acute alcohol-related problems increases significantly with consumption above 60 grams in a given day (Table 4). For women the cut-point is set at more than 40 grams per day. Context and the consumer should be considered factors in addition to alcohol intake in determining the potential for acute harm.[14] For example, the risk of harm is likely greater if alcohol in excess of 60 grams is consumed at a bar rather than in an individual's private dwelling or by a high-risk group such as pregnant women.

Studies on all-cause mortality have shown that the risk for men and women of alcohol-related chronic harm increase substantially with alcohol higher consumption.[15] Low-risk for chronic harm for men was identified as daily alcohol consumption of 40 grams or less, medium risk 41-60 grams and high risk 61 grams or more (Table 4). For women, low-risk was defined as daily alcohol consumption of 20 grams or less, medium-risk 21-40 grams and high-risk 41 grams or more (Table 4). The terms low, medium, and high risk are preferred to low, hazardous, and harmful as the risks are probable and not certain.[4]

Specific measurement tools have been created to explore high-risk alcohol use. The 2004 CAS utilized the Alcohol Use Disorders Identification Test (AUDIT) to determine hazardous consumption, harmful alcohol use patterns and alcohol dependence.[16] High risk drinking was determined by a score of 8 or more on the AUDIT scale.

TABLE 4

Examples of daily drinking quantities for risk levels of harm

Risk levels for alcohol-related harm

Gender	Low-risk for chronic harm	Medium-risk for acute harm	High-risk for acute and chronic harm
MEN	40 grams or less	41-60 grams	61 grams or more
	2 - 12 oz./341 ml bottles of regular strength beer (13.6 x 2 = 27 gm) or 2.5 - 5oz./142 ml glasses of wine (13.6 x 2.5 = 34 gm)	4 - 12 oz./341 ml bottles of regular strength beer (13.6 x 4 = 54 gm) or 4 - cocktails made with 1.5 oz of liquor (13.6 x 4 = 54 gm)	5 - 12 oz./341 ml bottles of regular strength beer (13.6 x 5 = 68 gm) or 5 - cocktails made with 1.5 oz of liquor (13.6 x 4 = 68 gm)
WOMEN	20 grams or less	21-40 grams	41 grams or more
	1 - 12 oz./341 ml bottles of regular strength beer (13.6 x 1 = 13.5 gm) or 1 - 5oz./142 ml glasses of wine (13.6 x 1 = 13.6 gm)	2 - 12 oz./341 ml bottles of regular strength beer (13.6 x 2 = 27 gm) or 2.5 - 5oz./142 ml glasses of wine (13.6 x 2.5 = 34 gm)	3 - 12 oz./341 ml bottles of regular strength beer (13.6 x 3 = 41gm) or 4 - cocktails made with 1.5 oz of liquor (13.6 x 4 = 54 gm)

Low-risk drinking guidelines

The most commonly accepted low-risk drinking guidelines referred to in Canada, developed by the Addiction Research Foundation and Canadian Centre on Substance Abuse, recommend that healthy individuals consume no more than two standard drinks per day with weekly limits of 14 standard drinks for men and 9 for women (Table 5).[17] The daily limits were principally formulated to decrease the risk for acute harms and the weekly limits for chronic health-related harms.[17] Evidence of adverse consequences of excess use supports the daily and weekly consumption limits, however to date, the guidelines have not been validated for their impact on knowledge and drinking behaviour.[17,18] In addition, specific survey questions to determine adherence to the guidelines have not been developed and have yet to be explored in the peer-reviewed literature.[19] Using three different datasets, adherence to the guidelines among Nova Scotians was explored. The Nova Scotia results varied depending on the questions used to measure compliance with the low-risk drinking guidelines.

TABLE 5

Low-risk drinking guidelines for people of drinking age[B]

# of drinks	Guideline
0	Abstinence = lowest risk of alcohol-related problem
2	No more than 2 standard drinks in any given day
9	Women: no more than 9 standard drinks per week
14	Men: no more than 14 standard drinks per week

Tips to following the guidelines
• Know what a standard drink is.
• Keep track of daily and weekly alcohol consumption.
• Do not drink and drive.
• Do not start drinking for health reasons.
• Do not drink if pregnant or trying to get pregnant.
• Be a responsible host.
• Inform your children about alcohol.
• Inform yourself of low-risk drinking initiatives.
• Devise home, work, school and community alcohol low-risk drinking policies.
• Check with your doctor if you concerned about the effects of alcohol on your health.

The guidelines do not apply if you
• Have health problems such as liver disease or mental illness.
• Are taking medications such as sedatives, painkillers or sleeping pills.
• Have a personal or family history of drinking problems.
• Have a family history or other risk factors for cancer.
• Are pregnant (or trying to get pregnant) or breastfeeding.
• Plan to operate motorized vehicles.
• Plan to operate machinery or dangerous equipment.
• Planning activities where you need to be in control.
• Are responsible for the safety of others.
• Advised not to drink for legal, medical or other reasons.

These guidelines provide only the most basic information on amount and frequency of use for the whole population. In contrast, the Australian Alcohol Guidelines (Table 6) comprise a comprehensive framework that provides information for the whole population about low-risk drinking as well as specific instructions for drinking context and those in high-risk groups.[20] Furthermore, the Australian Alcohol Guidelines are designed to support use and achieve any health-related benefits of consumption while decreasing the risk for alcohol-related harms. The guidelines cover low-risk quantity and frequency of use by gender and targeted information depending on the context, such as: the place of consumption (e.g. bar); if skill requiring or risky activities are planned (e.g. driving, equipment operation, swimming); if experiencing mental health problems or sleep disturbances (e.g. depression); and individual traits or characteristics (e.g. have close family members with dependence problems, are pregnant, taking medication, are an underage, young adult, or older drinker). The

[B] Adapted from the Centre for Addiction and Mental Health 2004 Low-risk drinking guidelines brochure.

rationale for the guidelines is outlined in addition to a discussion on risk terminology (low-risk, risky, high-risk, long and short-term risk).

Drinking context

Measures that describe drinking context are helpful in determining potential associations between drinking and harm, such as drinking and driving.[4] Sample survey questions include: During the past year, how often did you drink in public places such as bars, restaurants or sports arenas? During the past year, how often did you have two or more drinks before driving a car or motor vehicle?[4] Alternatively, survey participants can be asked questions about the proportion of drinking time spent at specific venues, such as in their own home or public places.

TABLE 6

Australian Alcohol Guidelines[20]

Guideline target	Standard
Whole population	Men: average of no more than 4 standard drinks* per day (maximum of 6 drinks/day and 28/week, 1-2 alcohol free days/week). Women: average of no more than 2 standard drinks per day (maximum of 4 drinks/day and 14/week, 1-2 alcohol free days/week). Consume over a number of hours (men: max 2 drinks in first hour then 1 drink/hour, women max 1 drink/hour). Assumptions: individual not on medication, no family history of alcohol-related problems or a conditions that can be aggravated by alcohol use, not pregnant, not planning skill requiring or risky activities.
Skill-requiring or risky activities	Abstain prior to and during activities.
Place of consumption	Ensure responsible drinking by not allowing guests to become intoxicated, encouraging non alcoholic choices, not serving intoxicated individuals, decrease risk of harms, monitoring young drinkers. Strategies to decrease harms: supplying non-alcoholic beverage choices, food, safe modes of transportation and responsible drinking training for employees in public places.
Individuals with alcohol-related health or social problems	Abstain from use or at least refrain from use for an extended period (weeks/months). After a period of abstinence can consider a supervised trial period of limited use. Total abstinence recommended if severely alcohol dependent or health problem (e.g. cirrhosis) aggravated by use. Limited infrequent use if have hepatitis C or chronic viral hepatitis.
Family history of alcohol problems	Carefully consider amounts consumed and make sure have 1-2 alcohol-free days a week. Consider abstaining.
Individuals with mental health issues and/or sleep disturbances	Stay within population guidelines. Check with doctor/ pharmacist about possible effects of drinking on their condition. Consider abstaining.
Individuals taking medications or other drugs	Check medications for harmful interactions with alcohol use. May require limiting intake or abstinence. Specific caution with certain medications (benzodiazepines, heroin, methadone, CNS depressants). If alcohol use inhibits effectiveness of other drugs taken or the effects of alcohol are enhanced by these other medications alcohol use may need to be restricted or eliminated. Check with doctor/ pharmacist about possible effects of drinking on their medication regime.
Older individuals	Consume less than whole population guideline.
Young adults (18-25 years)	Should not consume more than whole population guidelines. Abstain for several hours prior to planned risky activities (e.g driving, boating, swimming). Do not drink if taking other mood altering drugs.
Young individuals (under 18 years of age)	Same as for young adults and support the choice of abstainers, if possible have adult supervision, should drink minimally and never to the point of drunkenness. To become a responsible drinker alcohol should be monitored and introduced gradually.
Pregnant (or planning to be) women	Consider abstaining. Avoid intoxication. If decide to drink while pregnant limit intake to more less than 7 standard drinks/week, no more than 2/day consider over at least 2 hours. (Risk of effects of alcohol use on fetal development are highest in the earlier stages of pregnancy - starting at conception)
Abstainers	Should be supported in this decision and not encouraged to begin drinking for any potential health benefits.

* A standard drink in Australia refers to a beverage containing contains 10.0 g of pure alcohol

Alcohol-related harms

There are several barriers in the assessment of alcohol-related harms. Perhaps the biggest stumbling block in the assessment of alcohol-related harms is incomplete or inconsistent reporting of alcohol involvement, for example, health care workers not recording alcohol use in emergency room encounters or police not reporting alcohol involvement in motor vehicle crashes.[4] In a study examining psychosocial characteristics of seriously injured drivers admitted to a trauma unit, police had reported only 68.8% of drivers with positive blood alcohol levels as being under the influence or impaired.[21] Solutions to this problem of incomplete or inconsistent reporting include: using only alcohol-specific cases, such as alcohol liver cirrhosis; use of proxy measures known to be highly related to alcohol use, such as single vehicle night time crashes, night-time assaults or emergency room injuries; creating composite measures of harm to control for potential bias (cases not alcohol-related); and determining the contribution of alcohol to cases, such as etiologic fractions for health conditions known to at least be partially attributable to alcohol use.[4]

Administrative health data is often used to determine the proportion of disease or mortality attributable to alcohol consumption.[4] Single et al calculated the relative risks (alcohol users compared to non-users) for Canada and etiologic fractions for death and disease attributable to alcohol in Nova Scotia.[1,22] Table 7 shows the relative risk and etiologic fractions for specific conditions in which alcohol use is a direct or contributory cause. Relative risks were determined for drinkers with varying levels of alcohol use. Low level use was defined as alcohol consumption of 2.6 - 40 g for men and 2.6 - 20 g for women; hazardous use involves consumption of 41-60 g for men and 21-40 g for women; and harmful use indicates consumption of more than 61g for men and 41 g for women a day. Table 7 shows us that compared to non-users, men and women who consume low levels of alcohol have a 45% increased risk of developing liver cancer. Table 7 also shows us that for men, approximately 30% of all diagnosed cases and death from liver cancer can be attributed to alcohol use.

With the number of alcohol-attributed deaths for specific conditions calculated, it is possible to estimate Person Years of Life Lost (PYLL) for high-risk alcohol-related premature loss of life.[1] Table 7 displays the estimates for the number of PYLL in Nova Scotia in 1992 as a result of alcohol use. Estimates of PYLL particularly highlight the impact of alcohol on young adults. To monitor for trends over time, population rates of alcohol-related harm should be calculated for drinkers 15 years

of age and older rather than for the whole population. When using hospital discharge data for calculations, careful consideration must be placed on the recent change from International Classification of Diseases (ICD)-9 to ICD-10 diagnostic codes.[4]

CHRONIC USE

A number of health-related consequences can result from long-term consumption of alcohol.[4] Health indicators of chronic alcohol use include liver cirrhosis (alcoholic and unspecified), several forms of cancer (esophageal, liver, lip, oropharyngeal, breast and laryngeal), alcohol-related mental health and addictions issues (psychosis, dependence and abuse), Fetal Alcohol Spectrum Disorder, and cardiovascular disease (cardiomyopathy, hypertension, stroke and heart failure).[4] Alcoholic and unspecified cirrhosis are both used as indicators as alcohol dependence is not consistently reported on official medical documents.[4] This may be due, in part, to a lack of knowledge by health staff about the problem or to avoid the stigma of alcoholism.[4] The ICD and Diagnostic and Statistical Manual of Mental Disorders (DSM) classifications are both used to diagnose alcohol abuse and dependence. In addition there are a number of useful survey and screening tools readily available to determine alcohol abuse conditions.[4] These tools, which have been tested for reliability and validity, include the Composite International Diagnostic Interview (CIDI), Alcohol Use Disorder and Diagnostic Interview Schedule (AUDADIS), Schedules for Clinical Assessment in Neuropsychiatry (SCAN), CAGE, Alcohol Use Disorders Identification Test (AUDIT) and the Severity of Alcohol Dependence Questionnaire. Alcohol consumption has also been identified as a significant risk factor for several cancers including oral cavity, pharynx, oesophagus and liver (see Table 7).[C]

Studies indicate that chronic alcohol use is a causal factor in the development of haemorrhagic stroke, high blood pressure, cardiomyopathy, and heart failure, with low to moderate use a protective factor for ischaemic stroke and coronary artery disease.[4] Alcohol use is also a significant causal factor in gastritis (alcoholic and unspecified), and acute and chronic pancreatitis.[4]

Maternal drinking during pregnancy can result in the development of Fetal Alcohol Spectrum Disorder (FASD). FASD is an umbrella term used to describe a full range of physiological and neurological disabilities that may occur as a result of prenatal alcohol exposure.[23] Health Canada identifies FASD as the leading cause of developmental delay among children in this country.[23] The diagnosis of FASD and related conditions such as fetal alcohol syndrome (FAS), partial FAS,

[C] The etiologic fractions for Nova Scotia in Table 7 are a mean of the etiologic fractions for the age groups affected by the condition.

alcohol-related neuro-developmental disorder, and alcohol-related birth defects is complex. Canadian guidelines and standards for a systematic approach to the diagnosis of FASD conditions have been developed only recently; therefore, the prevalence of FASD and FAS in Canada and in Nova Scotia can only be estimated.[24] To determine the number of FASD-affected babies born each year in Canada, estimates from the United States are commonly applied. [24] Annually it is estimated in this way: in Canada, 9.1 out of 1,000 babies born are affected by FASD conditions, with up to a third of these affected by FAS (one of several conditions under the FASD umbrella). [24]

SHORT-TERM USE

Acute consequences of alcohol consumption include traffic crashes, injuries and deaths, suicide, and violence.[4] These consequences particularly impact youth and young adults resulting in significant costs to society and a large percentage of Person-Years of Life Lost (PYLL).[1,3,22] The development of indicators of acute consequences can help generate the data needed for policy makers so that harm minimization strategies are developed and implemented. These indicators can also be used to evaluate health public policies and harm minimization programs. Although underreporting of alcohol involvement for consequences of short-term use, such as in emergency room encounters, is a problem, calculating etiologic fractions (Table 7) and using proxy measures for problems known to be highly associated with alcohol use may be helpful when making policy and program decisions.[4,22]

OTHER CONSEQUENCES

The impact of alcohol abuse on children and families is significant. In the UK it is estimated that alcohol is a factor in 30-60% of child protection cases.[3] Verbal abuse, learning difficulties, relationship, financial, legal, and work-related problems have all been reported by users or those affected by others' alcohol use.[2] In addition, businesses pay a cost in terms of loss in productivity and missed work when valued employees experience alcohol-related problems.

TABLE 7

Relative risks (Canada), etiologic fractions and potential years of life lost due to alcohol for select conditions in Nova Scotia (1992)

	Relative risk by drinking level and sex				Etiologic fraction by outcome and sex				Potential years of life lost by sex			
	Low		Hazardous		Harmful		Mortality		Morbidity		Condition	
	M	F	M	F	M	F	M	F	M	F	M	F
CHRONIC												
Alcoholic liver cirrhosis†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0	1.0	1.0	1.0	420	244
Unspecified liver cirrhosis‡	1.26	1.26	9.54	9.54	9.54	9.54	0.540	0.430	0.540	0.430	n.a.	n.a.
Alcohol psychosis†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0	1.0	1.0	1.0	24	0
Alcohol dependence†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0	1.0	1.0	1.0	404	41
Alcohol abuse†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0	1.0	1.0	1.0	132	71
Esophageal cancer‡	1.80	1.80	2.37	2.37	4.26	4.26	0.376	0.226	0.375	0.226	155	35
Liver cancer‡	1.45	1.45	3.03	3.03	3.60	3.60	0.283	0.169	0.284	0.169	52	14
Lip and oropharyngeal cancer‡	1.45	1.45	1.85	1.85	5.39	5.39	0.281	0.151	0.279	0.151	110	32
Breast cancer‡	n.a.	1.09	n.a.	1.31	n.a.	1.68	n.a.	0.037	n.a.	0.037	n.a.	133
Laryngeal cancer‡	1.83	1.83	3.90	3.90	4.93	4.93	0.406	0.258	0.406	0.258	48	2
Alcoholic cardiomyopathy†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0	1.0	1.0	1.0	99	0
Hypertension‡	1.02	0.85	1.43	1.27	2.05	1.79	0.044	0.011	0.044	0.011	10	3
Stroke‡	0.60	0.58	0.92	0.48	1.79	1.32	0.019	0.002	0.019	0.002	41	2
Heart failure‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.005	0.001	0.016	0.009	4	2
Chronic pancreatitis‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.840	0.840	0.840	0.840	n.a.	n.a.
ACUTE												
Alcoholic gastritis†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0	1.0	1.0	1.0	52	11
Acute pancreatitis‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.240	0.240	0.240	0.240	27	31
Motor vehicle crashes†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.430	0.430	0.301	0.301	1230	660
Fire-related injuries‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.375	0.375	0.075	0.075	313	187
Hypothermia‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.250	0.250	0.250	0.250	4	0
Drowning‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.399	0.296	0.284	0.284	56	2
Accidents with firearms‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.250	0.250	0.175	0.175	29	0
Suicide, self-inflicted injuries‡	1.40	1.40	2.32	2.32	2.52	2.52	0.243	0.145	0.245	0.141	763	110
Accidental falls‡	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.295	0.257	0.254	0.238	100	52
Victim of assault†	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.270	0.270	0.270	0.270	n.a.	n.a.
Victim of child abuse (0-19 yr)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.160	0.160	0.160	0.160	n.a.	n.a.
Spontaneous abortion	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.020	n.a.	0.020	n.a.	n.a.

† all ages ‡ > 15 years of age n.a. is either not applicable (e.g. male breast cancer) or not required if etiologic fraction determined directly.

Adapted from: a) Single E, Rehm J, Robson L, Van Truong M. The relative risks and etiologic fractions of different causes of death and disease attributable to alcohol, tobacco and illicit drug use in Canada. CMAJ 2000;162(12):1669-75. b) World Health Organization: Dept of Mental Health and Substance Dependence. International Guide for Monitoring Alcohol Consumption and Related Harm. Geneva: World Health Organization;2000. c) Single E, Robson L, Xie X, Rehm J. The cost of substance abuse in Canada. Ottawa: Canadian Centre on Substance Abuse; 1996.

Alcohol use and harms in Canada

Per capita consumption

Since the early 1990's the annual per capita consumption of alcoholic beverages in Canada (about 100 litres of beverages) has remained fairly consistent.[6] Consumption by volume does not translate precisely into per capita consumption of pure ethyl alcohol as beverage preferences and alcohol contents vary over time. In 2004, annual per capita consumption in Canada was 7.9 litres of pure alcohol.[25a] The most commonly consumed alcoholic beverage was beer (81%).[25a]

Patterns of use

In 2003-2004, 79.3% of the Canadian population 15 years of age and older consumed at least one alcoholic beverage[D], 14% had not consumed any alcohol in that year, and 7% had never had a drink in their life.[2] Among drinkers in Canada most report (63.7%) their usual consumption is 1-2 drinks, 20.2% reported 3-4 drinks, and 16.0% reported consuming 5 or more drinks on a typical drinking day.[2]

High-risk drinking

Almost 45% of Canadians reported consuming 5 or more drinks at least once, with 20.7% reporting this behaviour 12 or more times in 2003.[25b] Heavy drinking, defined as 5 or more drinks for men and 4 or more drinks for women, was reported by 6.2% of the population at least once a week, with 25.5% reporting this behaviour at least once a month.[2]

Low-risk drinking guidelines

The 2004 Canadian Addiction Survey results indicate that among current drinkers, 22.6% (measured using the Last 7 Day method) exceeded the low-risk drinking guidelines in the year prior to the survey.[2]

Alcohol-related harms

In 1995, alcohol contributed to 3.1% (6,507) of deaths from all causes, 5.4% (172,126) of all potential years of life lost and 2.7% (82,014) of hospital admissions. [22] The single highest potential years of life lost is reported for motor vehicle accidents at 46,776 years in 1995.[22] This number is reflective of the high incidence of motor vehicle accidents involving youth and young adults.[22] This is also true for suicides involving alcohol, with the highest rates reported among the 35-44 age

[D] An alcoholic beverage (drink) refers to one bottle or can of beer or a glass of draught, a glass of wine or a wine cooler, one drink or cocktail with one and half ounces of liquor.

group.[6] In 1995, alcohol-related suicide and self-inflicted injuries were the cause of 35,959 potential years of life lost. Apart from the conditions that are wholly attributable to alcohol (e.g. alcoholic liver cirrhosis), alcohol was a cause of 84% of all cases of chronic pancreatitis, and 54% of male and 43% of female cases of non-specific cirrhosis.[22] Men who drank 61 or more grams and women 41 or more grams of alcohol a day were 10 times more likely to develop liver cirrhosis than abstainers.[22] The relative risks were four to five times higher for developing esophageal, laryngeal, lip, and oropharyngeal cancers for this same group compared to abstainers. In addition, alcohol psychosis, dependence, and abuse resulted in 19,744 hospital admissions.

Even though the rate of driving under the influence has decreased by 60% from 1980 to 2002, it was still the most common criminal offence in Canada in 2002 (12% of all criminal charges).[6] This may simply reflect less enforcement to some degree and ageing of the population. The proportion of drivers in fatal accidents with positive alcohol tests decreased by 30% in that same time period, however, since 1999 the numbers of fatally injured drivers testing positive has increased 3% annually. Of the 3197 fatalities from all motor vehicle crashes in Canada during 2002, it is estimated that 33% involved alcohol (n=1055).[26] Of the total number of motor vehicle deaths in 2002, 30% involved a drinking driver, with the death toll on public roadways (where at least one driver had been drinking) estimated to be 850.[26] Among fatally injured drivers, 35% tested positive for alcohol in 2002, with a large majority (83%) testing over the legal limit of 80 mg%.[26] It is estimated that in 2002, each day in Canada, alcohol was a factor in 195 vehicle crashes causing physical injuries and 648 crashes causing property damage.[6] It is also estimated that in 2002, alcohol impairment was a factor in 15% of all criminal offences.[6]

The number of drivers over the age of 18 who self-reported driving within two hours of alcohol consumption and driving while impaired decreased from 1998 to 2003.[6] According to an annual survey conducted by the Traffic Injury Research Foundation, the self-reported rates for driving within two hours of drinking decreased from 19.3% in 1998 to 15.8% in 2003, and the rates for driving while impaired from 9.1% to 6.3% during the same period.[6]

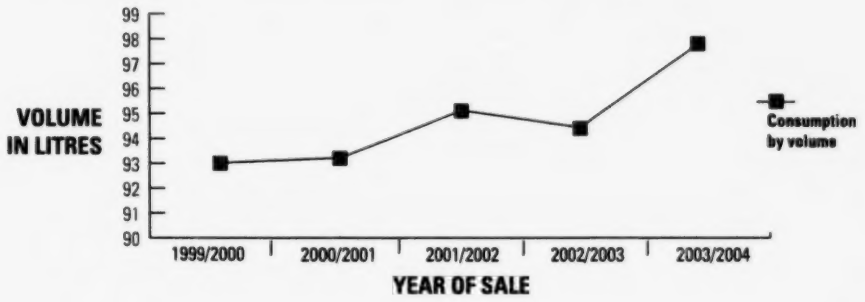
Alcohol use and harms in Nova Scotia

The alcohol indicator framework for Nova Scotia is largely based on the availability of data recommended in the International Guide for Monitoring Alcohol Consumption and Related Harm.[4] In addition, several indicators of interest to the addictions community in Nova Scotia were added such as treatment frequencies, alcohol-related offences, and addiction treatment outcomes. The interpretation of these additional indicators is limited by a number of factors. For example, differences observed in alcohol-related offences may be a result of changes in enforcement practices rather than alcohol behaviours. As well, differences in treatment rates over time can be impacted by participation as well as changes in capacity and admission policies.

Per capita consumption

Nova Scotia per capita estimates were calculated using sales data provided in the Nova Scotia Liquor Control Corporation's (NSLC) 2003-2004 annual report and Statistics Canada Census estimates for the Nova Scotia population aged 15 years and older for the fiscal years 1999-2003.[27,28] The NSLC sales data includes information on tourist consumption but excludes population consumption from other sources including home brew stores, duty free shops, military bases, First Nation Reserves, and out of province locations.

FIGURE 1
Per capita consumption in Nova Scotia, 1999-2004*

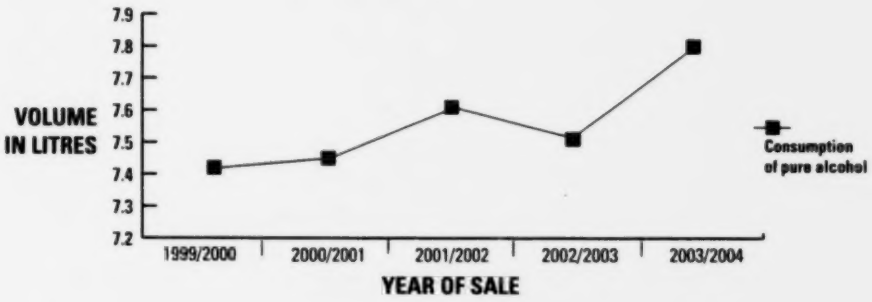


* Population estimates for October 1st were used for each of the 1999-2003 fiscal years. The 1999 population estimate for Nova Scotians aged 15 years and older was 761529, for 2000 - 763610, 2001 - 766238, 2002 - 772152, 2003 - 777132.

Per capita consumption by volume and pure alcohol are displayed in Figures 1 and 2, respectively. Per capita consumption increased steadily

over the first 3 fiscal years, dipped slightly in 2002 and rose again in 2003. The per capita volume consumed by Nova Scotians aged 15 years and older was 92.87 litres in 1999-2000 and 97.81 litres in 2003-2004. The per capita consumption of pure alcohol[E] followed the same trend increasing from 7.42 litres in 1999-2000 to 7.80 litres in 2003-2004. The Nova Scotian overall consumption of alcohol by volume (94.6l) for the fiscal period 1999-2004 was slightly lower than the overall Canadian rate[25a] of 104.9 litres for the years 2000-2004. The comparison was similar for consumption of pure alcohol, with the Nova Scotian rate at 7.57 litres and the Canadian rate[25a] at 7.76 litres.

FIGURE 2
Per capita consumption of pure alcohol in Nova Scotia, 1999-2004



During the five-year period per capita consumption of wine increased each year from 6.46 litres in 1999-2000 to 7.94 litres in 2003-2004. Wine cooler consumption also increased each year from 1.71 litres in 1999-2000 to 3.33 litres in 2003-2004. Nova Scotians' consumption of spirits increased from 6.57 litres in 1999-2000 to 6.64 litres in 2000/2001 then decreased each of the next two years rising again to 6.61 litres in 2003-2004. Beer consumption was the most erratic going up and down each year over the same period, starting at 78.13 litres in 1999-2000 and ending at 79.93 litres in 2003-2004.

As stated previously in the best practices section, per capita consumption estimates using survey data generally yield much lower than actual results.[4] Per capita consumption of pure alcohol using the 2004 CAS data was estimated at 2.5 litres, approximately 32.1% of the rate when sales data are applied. However, survey data are useful when determining patterns and harms of alcohol use. When interpreting the following survey estimates, it is important to remember that if consumption is severely underestimated using survey data, perhaps patterns of use and harms are also underestimated.

[E] Calculation of pure alcohol consumption is limited by the use of estimates for alcohol content for each of the beverage types rather than the true alcohol content.

The information for the following sections was largely drawn from four recent Nova Scotia data sources: the Canadian Community Health Survey (CCHS, n=4766, data collection Jan to Dec 2003), the 2003 Nova Scotia Gambling Prevalence Study (GPS, n=2800, data collection Apr to June 2003), the Canadian Addiction Survey* (CAS, n=1002, data collection Dec 2003 to Apr 2004), and the 2002 Student Drug Use Survey (SDUS, n=4308, data collection Spring 2002).[29,30,31,32] The sample population of the CCHS was made up of Nova Scotians aged 12 and older, 2003 Prevalence Study among Nova Scotians 19 years of age and older, CAS among those 15 years and older, and the SDUS was drawn from Nova Scotia students in grades 7, 9, 10, and 12. The findings of each of these surveys provided varying population estimates perhaps a result of different age groups included in the sample, survey response rates, time frames for data collection and measurement tools used. For more information about these surveys see Appendix.

Where specified, analysis in this report is based on the Canadian Addiction Survey. All computations on these microdata were prepared by Nova Scotia Health Promotion and the responsibility for the use and interpretation of these data is entirely that of Nova Scotia Health Promotion.

The Canadian Addiction Survey is a collaborative initiative sponsored by Health Canada, the Canadian Executive Council on Addictions (CECA) – which includes the Canadian Centre on Substance Abuse (CCSA); the Alberta Alcohol and Drug Abuse Commission (AADAC); the Addictions Foundation of Manitoba (AFM); the Centre for Addiction and Mental Health (CAMH), Prince Edward Island Provincial Health Services Authority, and the Kaiser Foundation – the Centre for Addictions Research of BC (CAR - BC), and the provinces of Nova Scotia, New Brunswick and British Columbia.

Patterns of use

The majority of Nova Scotians (74.0 - 80.7%) are current drinkers (consumed at least one standard drink[F] in the past 12 months), 5.4 - 10.4% have never drank and 13.8 - 16.9% are former drinkers (have not had a drink in the past year).[29,30,31] Men (80.5 - 82.9%) are more likely to be current drinkers than women (71.5 - 78.8%).[30,31] Nova Scotians aged 60 years and older (55.5 - 64.7%) are less likely to be current drinkers than younger Nova Scotians.[30,31] The highest current drinking rate was for adults aged 25-29 years at 90.9 - 91.1% followed by young adults aged 19-24 years at 89.2 - 92.3%.[30,31] Nova Scotians who have never been married had higher current drinking rates than those individuals who are currently or were previously married, 82.6 - 85.3% vs 73.3 - 75.3% respectively.[30,31] The average number of drinks consumed at a sitting by Nova Scotians was 3.2 drinks, with those 60 years and older consuming the least at 1.9 drinks and young adults 19 to 24 years of age the most at 5.5 drinks per sitting.[30]

Slightly more than half of adolescent students (51.7%) in Nova Scotia used alcohol in the year prior to the 2002 SDUS with no significant difference found for use by males or females (51.7% vs 52.1%).[32] Approximately a quarter of all students (25.8%) have never consumed any alcohol. Alcohol use by adolescents increased with advancing grade level from 15.5% in grade 7, 50.9% in grade 9, 64.5% in grade 10, to 81.2% in grade 12. Students with higher grade point averages (above 60%) and those whose friends use alcohol were more likely to report alcohol use. In the 2004 CAS, a current drinking rate of 74.8% was found for adolescents aged 15 to 18 years.[31]

[F] An alcoholic beverage (standard drink) in the survey referred to one bottle or can of beer or a glass of draught, a glass of wine or a wine cooler, one drink or cocktail with one and half ounces of liquor.

Heavy drinking

A significant number of Nova Scotians drink heavily. Survey reports indicate that 3-5.8% of Nova Scotians drink heavily every week of the year and 17.5-20% drink heavily at least once a month.[30,31] This pattern of behaviour is particularly high among underage drinkers and young adults.[30,31] Men were almost three times more likely to report heavy weekly drinking than were women. Nova Scotians who have never been married were also at higher risk for both heavy monthly and weekly drinking.

The rates for heavy drinking and drunkenness among students in Nova Scotia are high. Almost 3 in 10 students reported at least one episode of heavy drinking and/or had been drunk in the 30 days prior to the SDUS. Heavy drinking and drunkenness by students was associated with older age, lower grade point average and friends' use of alcohol. Gender was not a factor in reporting either of these behaviours by students.

High-risk alcohol use

A significant number of Nova Scotians put themselves at risk for harm as a result of their alcohol use. The Alcohol Use Disorders Identification Test (AUDIT) is a tool devised to identify hazardous consumption, harmful alcohol use patterns, and alcohol dependence.[16] High-risk drinking is determined by a score of 8 or more on the AUDIT scale. One in 5 current drinkers (20.8%) were identified as high-risk drinkers by the AUDIT scale, 15.7% of all Nova Scotians aged 15 years and older.[31] Based on Statistics Canada population estimates for 2003, these results suggest that 117,144 Nova Scotians 15 years of age and older are high-risk drinkers. Men, individuals who have never been married, young adults aged 19- 24 years, and youth aged 15-18 years were identified most frequently as high-risk drinkers by the AUDIT. The full extent of the risk level involved is difficult to ascertain without further information on the context of drinking, such as place of consumption, individual traits, and accompanying activities.

Considerations for future reports: *The definitions for heavy and high-risk drinking need clarification. Separate definitions for high-risk drinking for acute and chronic harms are required.*

Low-risk drinking guidelines

The proportion of Nova Scotians exceeding the low-risk drinking guidelines developed in Canada ranged from 3.0-17.7%.[30,31] In the 2004 CAS, compliance with the low-risk drinking guidelines was determined

by the Last 7 Day method.[31] Survey participants were considered non-compliant with the guidelines if they exceeded the daily and weekly gender specific limits over the 7 days prior to the survey.[31] Using this method, 17.7% of Nova Scotians (23.4% of current drinkers) exceeded the low-risk drinking guidelines with almost half of young adults (45.7%) aged 19-24 years exceeding the guidelines (49.1% of current drinkers).[31] Adolescents had the next highest rate of non-compliance among current drinkers at 26.8% (19.9% of all adolescents aged 15-18 years).[31] Adherence to the low-risk drinking guidelines in the GPS was determined with questions using the past year as a time frame. The proportion of Nova Scotians exceeding the daily and weekly gender specific guidelines was much lower in the 2003 GPS at 3.0%, with 8.1% of young adults aged 19-24 years noncompliant.[30] In both studies, men and never married individuals were much more likely to exceed the guidelines than women or those living with a partner or previously married.[30,31]

Considerations for future reports: *Explore the use of a standardised measurement tool to determine compliance with low-risk drinking guidelines. Low-risk guidelines should be expanded to provide information to cover situational drinking and high-risk groups. The Australian Alcohol guidelines could be explored for the development of more comprehensive guidelines for Nova Scotians.*

Alcohol-related harms

MORBIDITY

The 1992 Nova Scotia-specific etiologic fractions (Table 7) were used to determine the number of alcohol-related hospitalizations and the number of alcohol-related deaths in Nova Scotia for the five-year period 1999-2003. Calculation of etiologic fractions by the indirect method (for conditions only partly attributed to alcohol use) uses data about the prevalence for varying levels of alcohol consumption.[4] Where consumption patterns for risky drinking can change over time it is important that this be reflected in the calculation of etiologic fractions. Morbidity data was drawn from the Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD). (A system to capture similar data from cases treated at Hospital Emergency Departments is currently not in place in Nova Scotia.) The source for the mortality data was Statistics Canada Vital Statistics Database.

Table 8 presents the number of hospital admissions in Nova Scotia in which alcohol use either contributed to the length of the hospital stay or required resources for treatment. The majority of hospital

admissions were for direct alcohol-related conditions (alcohol psychosis, dependence, abuse), cirrhosis (alcoholic and unspecified liver), or accidental falls. For men, alcohol dependence was the most common alcohol-related diagnosis, and for women, accidental falls. The ratio of male to female admissions for alcohol-related conditions was consistently about 2:1 over the five-year period. In addition, the ratio of alcohol-related separations to all hospital separations remained consistent over the five-year period at 3.0-3.4%.

According to the 2003 CCHS[G], 9.3% of women who had given birth in the five years prior to the survey reported that they consumed alcohol at least once during their pregnancy, compared to just under 16% who reported having had at least one drink during pregnancy in a similar survey conducted in 2002.[33] From 1999 to 2003, it is estimated that 403 babies born in Nova Scotia were affected by prenatal exposure to alcohol (Fetal Alcohol Spectrum Disorder, FASD); approximately 81 babies a year.[H] Of these infants, it estimated that between 54 and 161 have Fetal Alcohol Syndrome (FAS), averaging 32 babies born each year with the condition. During that same five-year period, an average of 1.9 admissions to hospital each year were attributed to FAS (Table 8).

The number of hospital separations for direct alcohol-related conditions is displayed by age group in Table 9. Overall, the number of hospital admissions for direct alcohol-related conditions increased with age.

[G] CCHS rates for alcohol consumption during pregnancy were obtained from personal communication with Nova Scotia Department of Health analysts and are based on data from CCHS Cycles 1.1 and 2.1.

[H] Calculations based on number of live births recorded in: Service Nova Scotia Vital Statistics Annual Report, 2003.

TABLE 8

Hospitalizations due to alcohol use in Nova Scotia, 1999-2003

Number of alcohol-related hospital separations

	1999			2000			2001			2002			2003		
	M	F	Tot	M	F	Tot	M	F	Tot	M	F	Tot	M	F	Tot
CONDITION															
Chronic															
Alcoholic liver cirrhosis†	178	51	229	141	36	177	165	32	197	147	34	181	135	53	188
Unspecified liver cirrhosis‡	137	60	197	114	51	165	123	49	172	114	46	160	108	57	165
Alcohol psychosis†	215	70	285	235	68	303	263	59	322	232	51	283	212	59	271
Alcohol dependence†	548	194	742	384	122	506	343	93	436	360	122	482	281	95	376
Alcohol abuse†	137	63	200	116	72	188	188	94	282	222	104	326	169	80	249
Esophageal cancer‡	24	6	30	27	3	30	26	3	29	29	6	35	30	5	35
Liver cancer‡	13	4	17	9	4	13	15	3	18	13	4	17	11	6	17
Lip and oropharyngeal cancer‡	21	4	25	25	4	29	24	6	30	20	5	25	15	5	20
Breast cancer‡	0	15	15	0	29	29	0	26	26	0	29	29	0	23	23
Laryngeal cancer‡	21	2	23	15	3	18	19	1	20	22	4	26	20	1	21
Alcoholic cardiomyopathy†	9	4	13	10	1	11	13	3	16	10	0	10	4	0	4
Hypertension‡	29	9	38	28	10	38	33	11	44	41	13	54	34	9	43
Stroke‡	21	2	23	22	3	25	21	2	23	20	2	22	19	2	21
Heart failure‡	31	34	65	31	19	50	28	33	61	34	18	52	35	19	54
Chronic pancreatitis‡	51	41	92	36	39	75	58	40	98	60	34	94	54	28	82
Acute															
Alcoholic gastritis†	35	7	42	32	8	40	26	7	33	32	5	37	20	8	28
Acute pancreatitis‡	69	59	128	69	66	135	77	76	153	74	82	156	77	84	161
Motor vehicle crashes†	176	93	269	172	97	269	153	69	222	147	43	190	135	61	196
Fire-related injuries‡	3	1	4	2	1	3	3	1	4	2	1	3	2	0	2
Hypothermia‡	2	1	3	3	2	5	4	1	5	3	2	5	4	1	5
Drowning‡	1	1	2	1	1	2	1	0	1	1	0	1	2	0	2
Accidents with firearms‡	1	0	1	1	0	1	1	0	1	2	0	2	1	0	1
Suicide, self-inflicted injuries‡	74	51	125	61	43	104	68	46	114	66	48	114	67	46	113
Accidental falls‡	283	445	728	283	488	771	298	451	749	286	451	737	285	476	761
Victim of assault†	46	9	54	47	5	52	50	9	59	49	9	58	47	9	56
Victim of child abuse (0-19 yr)	1	0	1	1	1	2	1	1	2	1	1	2	1	0	1
Spontaneous abortion	0	2	2	0	2	2	0	2	2	0	1	1	1	0	1
Fetal alcohol syndrome	0	1	1	1	2	3	0	1	1	2	0	2	2	0	2
Total	**2126**	**1229**	**3355**	**1866**	**1180**	**3046**	**2001**	**1119**	**3120**	**1989**	**1115**	**3104**	**1771**	**1127**	**2898**

† all ages ‡ > 15 years of age

TABLE 9

Wholly alcohol-attributable hospital separations by age group, 1999-2003

Age in years

	<18	19-24	25-29	30-39	40-49	50-59	60+
CONDITION							
Alcohol psychosis	0	10	39	36	154	323	341
Alcohol dependence	50	162	135	557	633	479	506
Alcohol abuse	90	135	93	253	308	183	185
Alcoholic liver cirrhosis	0	1	5	47	195	309	430
Other wholly alcohol-related harms	14	2	5	26	64	58	73
Total	**154**	**310**	**277**	**919**	**1354**	**1352**	**1535**

* Includes: alcoholic cardiomyopathy, alcoholic gastritis, maternal care damage from fetus from alcohol, fetus and newborn affected by maternal use of alcohol, and fetal alcohol syndrome

The 2004 National Trauma Registry Report presents the number and percentage of major trauma cases in Nova Scotia involving blood alcohol concentrations (BAC).[34] Major trauma cases need extended hospitalizations with an average hospital stay of 14.9 days. The injuries are frequently life-threatening and require care at a specialized trauma hospital. Among those cases where testing occurred, 47 (11.7%) of the 403 major trauma cases in Nova Scotia involved positive BAC in 2002-2003.[34]

At present, there is no systematic approach when recording alcohol involvement in emergency room cases in Nova Scotia. Therefore, the frequency of alcohol-related emergency room cases, as well as predictors of alcohol-related emergency room use in Nova Scotia is unknown. However, Young et al. using emergency room presentation data from five countries determined predictors of alcohol-related injury cases. They observed that predictors of alcohol-related injury cases included time (between 12 and 5am, 56%) and day (Friday to Sunday, 26%) of presentation, gender (male, 28%), age (18 to 45 years, 24%), and marital status (never married, 24%).[35]

Considerations for future reports:

- *Increase the frequency and consistency of testing for blood alcohol involvement in injury cases.*
- *Develop a process to access clinical information related to Emergency Department admissions.*
- *Calculate etiologic fractions to determine alcohol involvement in emergency room cases in Nova Scotia.*
- *Use physician billing data to further explore alcohol-related morbidity in Nova Scotia.*

MORTALITY

Alcohol-related deaths in Nova Scotia for the five-year period, 1999 to 2003, are presented in Table 10. During this time period, approximately 1149 deaths in Nova Scotia can be attributed to alcohol use. Liver disease was the cause of 30% of all alcohol-related deaths in Nova Scotia from 1999-2003, with alcohol-attributable cancer deaths accounting for a further 20%. The three leading causes of death from acute use of alcohol (motor vehicle crashes, suicide and accidental falls) accounted for 33% of all alcohol-related deaths in the same time period. Men were almost three times more likely to die from an alcohol-related condition than were women.

Between 1999 and 2003, there were 163 motor vehicle related deaths involving alcohol in Nova Scotia. According to the Traffic Research Foundation, 56% of all fatally injured drivers in Nova Scotia tested positive for blood alcohol. Of those with positive test results for alcohol, 61% were over the legal limit of 80 mg %.[28]

TABLE 10

Alcohol-related deaths in Nova Scotia, 1999-2003

Number of alcohol-related deaths

	1999			2000			2001			2002			2003		
	M	F	Tot	M	F	Tot	M	F	Tot	M	F	Tot	M	F	Tot
CONDITION															
Chronic															
Alcoholic liver cirrhosis†	26	6	32	27	5	32	21	4	25	19	9	28	21	9	30
Unspecified liver cirrhosis‡	24	9	33	25	10	35	22	9	31	19	9	28	23	11	34
Alcohol psychosis†	1	0	1	4	0	4	9	1	10	4	1	5	2	0	2
Alcohol dependence†	16	3	19	7	0	7	8	0	8	8	3	11	8	1	9
Alcohol abuse†	3	1	4	8	0	8	4	1	5	3	0	3	4	1	5
Esophageal cancer‡	15	3	18	15	2	17	17	1	18	14	3	17	14	3	17
Liver cancer‡	6	2	8	6	2	8	5	2	7	5	3	8	5	4	9
Lip and oropharyngeal cancer‡	6	0	6	8	1	9	8	1	9	8	1	9	5	1	6
Breast cancer‡	0	7	7	0	7	7	0	6	6	0	6	6	0	8	8
Laryngeal cancer‡	4	1	5	6	1	7	4	1	5	8	1	9	6	0	6
Alcoholic cardiomyopathy†	3	0	3	0	0	0	3	0	3	0	0	0	2	0	2
Hypertension‡	1	0	1	1	3	4	1	0	1	1	1	2	1	1	2
Stroke‡	4	1	5	4	1	5	4	1	5	4	1	5	4	1	5
Heart failure‡	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Chronic pancreatitis‡	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0
Acute															
Alcoholic gastritis†	2	0	2	0	0	0	0	0	0	0	1	1	2	0	2
Acute pancreatitis‡	2	1	3	1	1	2	1	2	3	2	2	4	1	2	3
Motor vehicle crashes†	28	9	37	22	8	30	24	5	29	25	12	37	21	9	30
Fire-related injuries‡	2	2	4	2	2	4	3	1	4	3	2	5	3	1	4
Hypothermia‡	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1
Drowning‡	7	1	8	4	1	5	3	0	3	2	0	2	3	0	3
Accidents with firearms‡	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Suicide, self-inflicted injuries‡	23	3	26	15	2	17	18	2	20	20	4	24	19	3	22
Accidental falls‡	11	12	23	9	11	20	13	13	26	13	11	14	13	14	27
Victim of assault†	2	1	3	3	1	4	2	0	2	1	1	2	1	0	1
Victim of child abuse (0-19 yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spontaneous abortion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fetal alcohol syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**190**	**62**	**252**	**168**	**58**	**226**	**172**	**50**	**222**	**160**	**71**	**221**	**159**	**69**	**228**

† all ages ‡ > 15 years of age

TABLE 11

Wholly alcohol-attributable deaths by age group, 1999-2003

Age in years

	<18	19-24	25-29	30-39	40-49	50-59	60+
CONDITION							
Alcohol psychosis	0	0	0	2	1	2	17
Alcohol dependence	0	0	0	2	7	12	33
Alcohol abuse	0	0	1	3	5	5	11
Alcoholic liver cirrhosis	0	0	1	10	24	43	71
Other wholly alcohol-related harms*	0	0	0	1	0	2	10
Total	**0**	**0**	**2**	**18**	**37**	**64**	**142**

* Includes: alcoholic cardiomyopathy, alcoholic gastritis, maternal care damage from fetus from alcohol, fetus and newborn affected by maternal use of alcohol, and fetal alcohol syndrome

Similar to the rates of hospital admissions, wholly alcohol-attributable deaths increased with age (Table 11). The number of alcohol-related deaths remained steady after an initial drop of 10% from 1999 to 2000. The ratio of alcohol-related mortality since 1999, when it was 3.3%, has remained stable at 2.8 - 2.9% of all-cause mortality. Although per capita consumption of alcohol increased from 1999 to 2004, a corresponding increase in alcohol-related mortality rates in Nova Scotia was not observed. Perhaps the types of beverages (wine and wine coolers) associated with the increase in consumption are consumed differently (e.g. pattern and context) and have little impact on the frequency of acute harms in the short term, but may have a negative impact on chronic harms over time. Or perhaps our calculation of per capita consumption used inaccurate estimates of beverage strength, particularly for pre-mixed spirits.

Considerations for future reports:

- *Apply the etiologic fractions to be released in early 2006 to the morbidity and mortality data included in this version and for future editions of the Alcohol Indicators Report. Ensure current estimates for prevalence of risky drinking are used when calculating etiologic fractions.*
- *Determine potential years of life lost from alcohol-related deaths.*
- *Explore types of beverages most related to acute and chronic harms in Nova Scotia.*

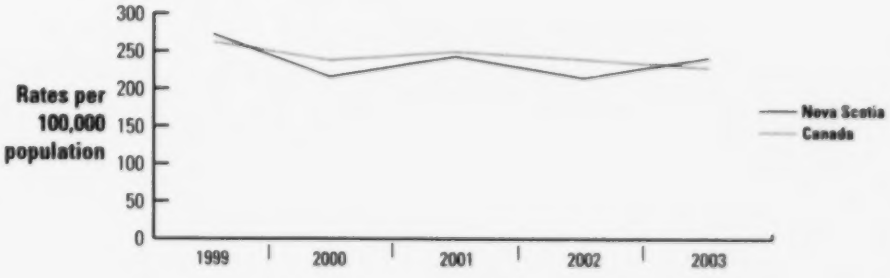
INCIDENTS OF ALCOHOL-RELATED OFFENCES[1]

In the five-year period 1999 to 2003, there were 3.4 incidents of charges per year brought against individuals for impaired operation of a motor vehicle causing death and 0.6 incidents per year for impaired operation of a boat, vessel or aircraft causing death in Nova Scotia. The rates for impaired operation of a motor vehicle causing death were lower in Nova Scotia at 0.2 per 100,000 population compared to the Canadian rate of 0.4/100,000 over the five years. The Nova Scotia rate for charges related to impaired operation of a boat, vessel or aircraft causing death was the same as the all Canada rate of 0 per 100,000 population. In the same period, 9 - 23 charges per year were brought against individuals for impaired operation of a motor vehicle causing bodily harm and 1 - 3 charges per year for impaired operation of a boat, vessel or aircraft causing bodily harm in Nova Scotia. The Nova Scotia rate of 1.6 per 100,000 for impaired operation of a motor vehicle causing bodily harm was lower than the Canadian rate of 3.2 per 100,000 population over the five-year period. There was no difference in the 5-year period for impaired operation of a boat, vessel or aircraft causing bodily harm at 0 per 100,000 population.

As shown in Figure 3, the Nova Scotia (235) and Canadian rates (242) per 100,000 population for impaired operation of a motor vehicle over 80mg were similar over the five years. However, the incidents of impaired operation of a boat, vessel, or aircraft causing bodily harm of 2.2/100,000 in Nova Scotia were almost double the overall Canadian rate of 1.2/100,000 a year over the past 5 years.

When interpreting alcohol-related offences data, it is important to note that differences observed in the frequency of alcohol-related offences over time may be a result of other factors such as changes in enforcement practices rather than alcohol-related behaviours.

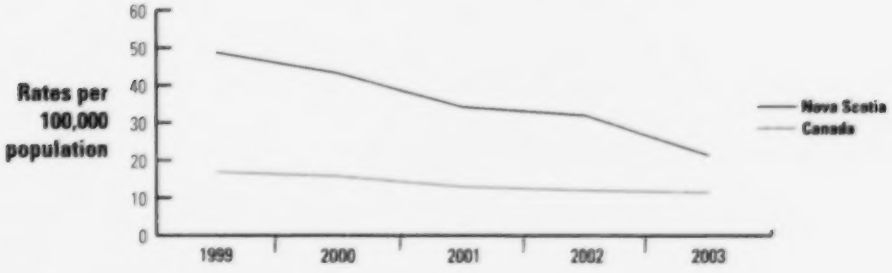
FIGURE 3
Impaired operation of a motor vehicle over 80mg.



[1] The research and analysis in this section of the document are based on data from the Canadian Centre for Justice Statistics (CCJS) that has been provided by various federal, provincial, or municipal agencies responsible for the administration of justice. Alcohol and drug-related offences are aggregated in CCJS.

Figure 4 demonstrates the substantial reduction in incidents of failing or refusing to provide a breath sample over the past 5 years. The number of actual incidents has decreased from 454 in 1999 to 197 in 2003. The rates per 100,000 population over the five-year period are much higher in Nova Scotia at 36 compared to the overall Canadian rate of 14 incidents per 100,000 population a year. The incidents for failing or refusing to provide a blood sample over the past 5 years have also declined from 24 incidents in 1999 to 13 incidents in 2003. The Nova Scotia population rate of 2.2 per 100,000 is more than 10 times higher than the Canadian rate of 0.2 per 100,000 a year over the five-year period.

FIGURE 4
Failure or refusal to provide a breath sample



Recent studies indicate that 7.5% of Nova Scotians drove a motor vehicle after consuming two or more drinks in the previous hour.[29,31] Being a passenger in a motor vehicle driven by a someone under the influence of alcohol was reported by 11.5% of Nova Scotians in the year prior to the studies. Drinking and driving is also a problem among students with or without a valid driver's license in Nova Scotia.[32] Among students in grades 7, 9, 10, and 12 with a driver's license, 14.8% reported driving within an hour of consuming two or more drinks and 6.6% of all students in these grades, regardless of licensing status, reported the same behaviour. In addition, 22.8% of students reported being a passenger in a vehicle driven by someone under the influence of alcohol in the prior year.

Considering the prevalence of underage drinking in Nova Scotia, it is worthwhile to note that the sale or serving of alcohol to minors is an offence under Section 89 of the Nova Scotia Liquor Control Act. Between 1999 and 2003, a total of 366 charges under Section 89 were laid. The highest number of charges in any year was 123 in 1999, to a low of 46 in 2002. Public intoxication is also an offence in Nova Scotia.

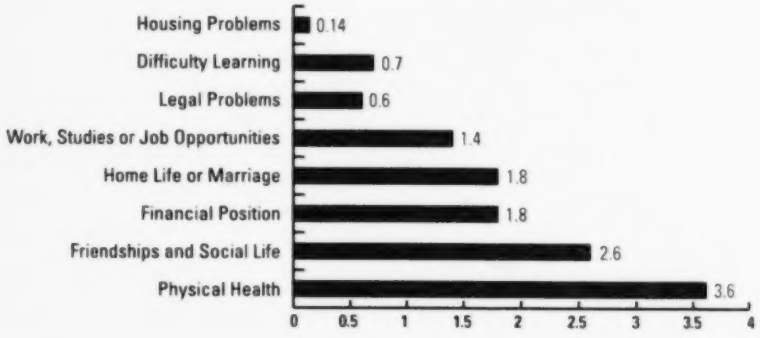
Section 87 of the Nova Scotia Liquor Control Act pertains to offences related to being intoxicated in a public place. An annual average of 2882 offences under Section 87 were recorded in Nova Scotia from 1999 to 2003, for a total of 14,410 offences.

SELF-REPORTED HARMS

In the year prior to the 2004 CAS, 8.6% of current drinkers (approximately 47,871 Nova Scotians 15 years of age and older) reported one or more harms from their own use of alcohol (Figure 5).[31] Nova Scotians who drank heavily once a month or more (consumption of 5 or more drinks for men and 4 or more drinks for women at a sitting) were 7 times more likely than non-heavy drinkers to report one or more harms from their own use of alcohol; those who drank heavily every week were 8.5 times more likely ($p<0.001$).[31] Almost twice as many men (11.4%) than women (5.8%) reported harm from their own use of alcohol ($p<0.05$).[31] Among current drinkers, harm from their own drinking impacted most on their physical health, and their friendships and social life in the past year.[31] In the 2003 GPS, 1.6% (about 11,621) of current drinkers aged 19 years and older reported they currently have a problem with the amount of alcohol they consume or what happens when they drink.[30] Based on Statistics Canada population estimates, this means that approximately 9,378 Nova Scotians aged 19 years of age and older had a problem with their use of alcohol in 2003.

FIGURE 5

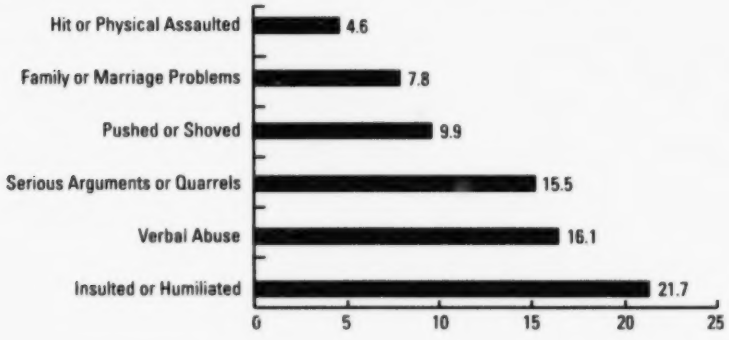
Proportion of Nova Scotians aged 15+ years reporting harm from one's own drinking in the 12 months prior to the 2004 CAS (n=927)



In addition to harming themselves from drinking, many others can be affected. In the year prior to the 2004 CAS, 32.1% of Nova Scotians aged 18 years and older experienced one or more harms from someone else's use of alcohol (Figure 6). The most frequently reported harms by others were being insulted or humiliated, verbally abused, or involved in a serious argument with a drinker.

FIGURE 6

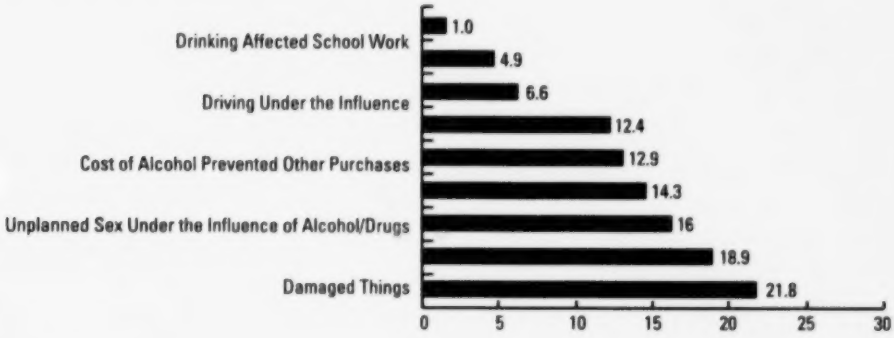
Percentage of Nova Scotians aged 18+ years reporting harm from others' drinking in the 12 months prior to the 2004 CAS (n=947)



Among students in grades 7, 9, 10, and 12 in Nova Scotia, 30.5% reported experiencing at least one alcohol-related problem in the year prior to the 2002 SDUS, with 11% reporting three or more problems (Figure 7).[32] As a consequence of alcohol consumption, students were most likely to have damaged things, injured themselves, had unplanned sexual intercourse, or had disagreements or tension with family or friends. In contrast with the 2004 CAS findings, females were just as likely as males to report alcohol-related problems. The proportion of students reporting alcohol-related problems increased with grade level ($p<0.001$).

FIGURE 7

Percentage of students reporting problems from one's own drinking in the year prior to the 2002 SDUS (n=2270)



Future considerations:

- *Further determine consumption patterns and context of those experiencing harm from their own drinking.*
- *The full extent of the impact of harms on drinkers and others needs to be further explored.*

TREATMENT

When interpreting alcohol-related treatment statistics, it is important to note that differences observed in treatment rates over time can be impacted by participation as well as changes in capacity (e.g. number of beds available, staffing), admission policies, and public awareness of programs and services. For example, in 2002, the Province of Nova Scotia enhanced prevention and treatment programs and services for youth and women at risk for, and/or experiencing, substance use related problems. Therefore, one might expect an increase in the number of youth and women participating in prevention and treatment programs after 2002.

Since 2000, the number of Nova Scotians reporting alcohol use at intake has increased by 14.7% from 5,883 in 2000 to 6,749 in 2004 (Table 12). The number of Nova Scotians treated at Addiction Services across the province decreased between 2000 and 2001 but since that time the number of Nova Scotians seeking treatment has increased yearly. Over the five-year period, the ratio of male to female clients has remained fairly stable at 3:1.

The majority of clients reporting alcohol use at intake in Nova Scotia also report use of other substances. Female clients were more apt to report multiple substance use than male clients. Over the five-year

period, 77.1% of women treated at Addiction Services reported multiple substance use compared to 71.1% of men. The use of one other drug in addition to alcohol was reported by 28.5% of women and 31.7% of men. The use of two or more drugs in addition to alcohol was reported by 48.6% of women and 40.4% of men.

TABLE 12
Alcohol addiction treatment frequency for Nova Scotia by region (all ages)
REGIONS

	Western	East	North	Central	Total	M	F	Province
YEAR	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n*
2000	1523	1760	1430	1507	6220	4684	1536	5883
	(24.5)	(28.3)	(23.0)	(24.2)	(100)	(75.3)	(24.7)	
2001	1599	1666	1240	1639	6144	4528	1616	5825
	(26.0)	(27.1)	(20.2)	(26.7)	(100)	(73.7)	(26.3)	
2002	1675	1695	1362	1750	6482	4802	1680	6161
	(25.8)	(26.1)	(21.0)	(27.0)	(100)	(74.1)	(25.9)	
2003	1684	1665	1586	1796	6731	4981	1750	6442
	(25.0)	(24.7)	(23.6)	(26.7)	(100)	(74.0)	(26.0)	
2004	1882	1656	1632	1859	7029	5251	1778	6749
	(26.8)	(23.6)	(23.2)	(26.4)	(100)	(74.7)	(25.3)	

* Provincial totals refer to unique clients treated in the year - some clients received treatment in more than one region.

The Outcome Monitoring System is a process used by Addiction Services of Nova Scotia to evaluate treatment programs provided in the province. The purpose of the Outcome Monitoring System (OMS) is to maintain and enhance the quality of programs, provide data for future improvement, evidence to support resource allocation, and to provide a venue for clients to reflect on their recovery experiences. The first year of completed data for evaluation purposes was from October 1, 2003 to September 30, 2004. Among clients treated for alcohol use (n=277) participating in the first year of the OMS process, 83.4% reported no use or less use of alcohol 12 months after completion of an addiction services program; 15.1% reported the same use and 1.4% reported increased use of alcohol.

Adolescent addiction treatment frequencies are displayed in Table 13. The number of Nova Scotia adolescents seeking treatment has increased steadily over the five-year period. In 2000, 625 adolescents sought treatment at Addiction Services and in 2004, 804 attended a treatment program. The ratio of male to female attendance has maintained at about 2:1. The majority of adolescent clients also use other substances. The rates for use of one or two other substances

were about equal for female and male adolescents. Approximately 23% reported use of one other substance and 71% use of two or more drugs. More adolescents were treated in the western region than any other region; 35.7% of total treated compared to 20.4 - 22.9% for the other 3 regions.

Among adolescents treated for alcohol use (n=27) in the first year of the OMS process (October 1, 2003 to September 30, 2004), 77.8% reported no use or less use of alcohol 12 months after completion of an addiction services program;18.5% reported the same use and 3.7% reported increased use of alcohol.

TABLE 13

Adolescent alcohol treatment frequency for Nova Scotia by region (18 years or younger)

REGIONS

	Western	East	North	Central	Total	M	F	Province
FISCAL YEAR	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n*
2000	221	168	139	136	664	438	226	625
	(33.3)	(25.3)	(20.9)	(20.5)	(100)	(66.0)	(34.0)	
2001	249	140	98	176	663	451	212	630
	(37.6)	(21.1)	(14.8)	(26.5)	(100)	(68.0)	(32.0)	
2002	276	162	138	148	724	487	237	692
	(38.1)	(22.4)	(19.1)	(20.4)	(100)	(67.30	(32.7)	
2003	296	129	187	185	797	506	291	753
	(37.1)	(16.2)	(23.5)	(23.2)	(100)	(63.5)	(36.50)	
2004	270	142	224	202	838	547	291	804
	(32.2)	(16.9)	(26.7)	(24.1)	(100)	(65.3)	(34.7)	

* Provincial totals refer to unique clients treated in the year - some clients received treatment in more than one region.

HARMS AND TREATMENT

Among current drinkers aged 15 years and older, 8.6% reported experiencing one or more alcohol-related problems.[31] The AUDIT scale administered to the same population revealed that 20.8% (scored 8 or more) of current drinkers are at high risk for harms.[31] These results indicate that many Nova Scotians have experienced harm or are at risk for future alcohol-related harms. Applying these risk estimates to the 2003 estimate of current drinkers 15 years of age and older in Nova Scotia (n=563,190), the number of Nova Scotians who have experienced harm already or are at risk for alcohol-related harms or dependence was determined to be between 48,434 to 117,144 individuals.

The developers of the AUDIT recommend brief interventions of advice or education for individuals who score between 8 and 15 on the test, and for those who score between 16 to 19 brief interventions

consisting of advice, counselling, and follow-up are recommended.[16] For those individuals scoring more than 19 on the test, further investigation is required to determine a possible diagnosis of alcohol dependence with appropriate treatment to follow.[16] In the 2003 CAS, 18.8% of current drinkers aged 15 years or more scored between 8-15, 1.4% between 16 and 19, and 0.6% scored more than 19 on the AUDIT.[31] Applying these rates to population estimates for 2003 indicates that potentially 105,880 Nova Scotians may require brief interventions of advice or education, and 7885 may need brief interventions consisting of advice, counselling, and follow-up to decrease their risk for problems associated with alcohol use. Investigation for alcohol dependence is recommended for potentially 3379 Nova Scotians.

Many Nova Scotians recognize themselves that they have a problem with their alcohol use. In the 2003 GPS, 1.6% of current drinkers 19 years of age and older (approximately 9,378 Nova Scotians) reported having a problem with the amount of alcohol they consume and/or their behaviour while under the influence.[30] The number of these individuals who will experience natural recovery or could benefit from brief intervention with a health care provider, the services of a private counsellor, an Employee Assistance Program, or an addiction treatment program is unclear. In addition, recent survey findings indicate that 32.1% of Nova Scotians aged 18 years and older (approximately 237,270 Nova Scotians) have been harmed by another's use of alcohol.[31] In 2003, 6442 individuals attended Addictions Services sponsored programs. It is unknown how many others sought treatment through their primary care physician, Employee Assistance Program, or elsewhere. Further investigation is required to determine if the necessary programs are available to meet the needs of Nova Scotians with alcohol-related issues.

Among students in Nova Scotia, 30.5% reported experiencing at least one alcohol-related problem in the year prior to the 2002 SDUS, with 11% reporting three or more problems.[32] In addition, 2.5% of students indicated they required assistance with their alcohol use and 2% received help. According to these results, there are some unmet needs regarding alcohol use among students who admit they have a problem, but there may also be a further opportunity to assist students who report experiencing problems with some form of brief intervention to reduce any further harms.

Considerations for future reports: *Determine if all Nova Scotians with alcohol-related harm issues are receiving the support they need, whether it*

be brief interventions or formal treatment programs. The use of wait lists for services can be used to determine adequacy of services as well as survey questions asking if people know where to seek help.

Recommendations

Recommendation 1

The findings from Alcohol Indicators Report should be communicated to key decision-makers throughout Nova Scotia.

The Alcohol Indicators Report is a comprehensive synopsis of current alcohol use and related harms in Nova Scotia. The findings from this report should be communicated to key decision-makers at the provincial, regional, municipal, and community levels, in health, enforcement, education, alcohol industry, and other sectors impacted by alcohol-related harms. The information from the report will help inform future policy initiatives and activities targeted at preventing and/or reducing alcohol-related harms.

Recommendation 2

A comprehensive alcohol strategy for Nova Scotia aimed at reducing harmful alcohol use and associated harms should be initiated.

This report should serve as the framework upon which Nova Scotia Health Promotion initiates a comprehensive strategy designed to reduce alcohol-related harms in collaboration with provincial and regional partners and stakeholders. Such a strategy should attend to best practices and incorporate both population health approaches and harm reduction interventions targeted at the most harmful patterns and contexts of alcohol consumption. A population health approach encompasses such policies as alcohol pricing, taxation, and modifying access to alcohol. The strategy should identify harm reduction interventions targeting individuals involved with high-risk drinking patterns (e.g. 5 or more drinks per drinking occasion) and include recommendations for the prevention of acute harms (e.g. unintentional injuries) while not impacting on any potential health benefits of moderate alcohol consumption.

Recommendation 3

The Alcohol Indicators Report should be repeated in Nova Scotia on a three-to-four year cycle.

The Alcohol Indicators Report should serve as the framework for a provincial monitoring system comprised of alcohol indicators that are direct and/or proxy measures of alcohol use and related harms in Nova

Scotia, making it possible to observe trends over time, make comparisons, and measure the impact of policies and strategies. It is recommended that the report be prepared on a three-to-four year cycle.

Recommendation 4

Further research should address the full impact of alcohol-related harms, including the context of high-risk drinking and the cost impact of alcohol on Nova Scotians.

The Alcohol Indictors Report is a significant step towards improving the state of knowledge and understanding about the scope of harms associated with alcohol use in Nova Scotia. The full report identifies a number of opportunities to improve that knowledge, which should be considered in future reports, for example using physician billing to further explore alcohol-related morbidity. Ongoing research could address such gaps as exploring the types of beverages most related to acute and chronic harms in Nova Scotia and exploring the context of alcohol use among those experiencing alcohol-related harms. Finally, the cost impact of alcohol use on Nova Scotians needs to be updated to more accurately reflect the direct and indirect costs associated with harmful use.

Glossary

AUDADIS Alcohol Use Disorder and Diagnostic Interview Schedule is a screening tool used to determine alcohol abuse.

AUDIT Alcohol Use Disorders Identification Test

CAGE Is a screening tool used to determine alcohol abuse.

CAS Canadian Addiction Survey (n=1002, data collection Dec 2003 to Apr 2004)

CCHS Canadian Community Health Survey (n=4766, data collection Jan to Dec 2003)

CIDI Composite International Diagnostic Interview is a screening tool used to determine alcohol abuse.

CIHI Canadian Institute for Health Information (CIHI)

DAD Discharge Abstract Database

Etiologic fractions Proportion of a condition attributable to a specific cause such as alcohol use.

FASD Fetal alcohol spectrum disorder

GPS 2003 Nova Scotia Gambling Prevalence Study (n=2800, data collection Apr to June 2003)

GQF Graduated Quantity Frequency, a method for determining alcohol patterns of use.

ICD The International Classification of Diseases is the standard tool used by epidemiologists and health managers to classify diseases and other health problems

Non-beverage alcohol Alcohols used for other purposes and not meant for consumption such as Lysol.

OMS Outcome Monitoring System is a process used by Addiction Services of Nova Scotia to evaluate treatment programs provided in the province.

PCC Per capita consumption

Proxy measures If a characteristic cannot be directly measured an alternative characteristic that closely reflects the desired measure is used.

PYLL Potential years of life lost

SCAN Schedules for Clinical Assessment in Neuropsychiatry is a screening tool used to determine alcohol abuse.

SDUS 2002 Student Drug Use Survey (n=4308, data collection Spring 2002)

QF Quantity-Frequency, a method for determining alcohol patterns of use.

Appendix

Prevalence surveys used in Nova Scotia findings

	CAS*	CCHS	GPS	SDUS
CHARACTERISTICS				
Sample	1002	4766	2800	4308
Population	15 years and older	12 years and older	18 years and older	Grade 7, 9, 10 & 12
Sample design	2-stage random sample stratified by regional areas	3-stage sampling stratified by regional areas	Single-stage random	Single-stage stratified cluster sample of randomly selected classes
Interview method	Telephone	Personal or telephone	Telephone	Self-administered
Data collection	Dec 2003-Apr 2004	Jan–Dec 2003	Apr–Jun 2003	Spring 2002
Response rate	47%	Not available	68%	99.4%
Weighting	Sample weighted to represent Census data for sex, age and province	Applied to reflect the number of individuals from the population each participant represents.	None	Data weighted to compensate for disparity of the sampling strategy

* Where specified, analysis in this report is based on the Canadian Addiction Survey. All computations on these microdata were prepared by Nova Scotia Health Promotion and the responsibility for the use and interpretation of these data is entirely that of Nova Scotia Health Promotion.

The Canadian Addiction Survey is a collaborative initiative sponsored by Health Canada, the Canadian Executive Council on Addictions (CECA) - which includes the Canadian Centre on Substance Abuse (CCSA); the Alberta Alcohol and Drug Abuse Commission (AADAC); the Addictions Foundation of Manitoba (AFM); the Centre for Addiction and Mental Health (CAMH), Prince Edward Island Provincial Health Services Authority, and the Kaiser Foundation - the Centre for Addictions Research of BC (CAR - BC), and the provinces of Nova Scotia, New Brunswick and British Columbia.

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Health Promotion

Addiction Services

Alcohol Indicators Report

Executive Summary

A framework of alcohol indicators describing the consumption of use, patterns of use, and alcohol-related harms in Nova Scotia

NOVEMBER 2005

NOVA SCOTIA
Health Promotion
Addiction Services

Foreword

Alcohol is without doubt still Canadians' favourite recreational drug. As shown in this excellent report, three-quarters of Nova Scotians are current drinkers of alcohol. Sadly, however, there is also a nasty hangover with as many as 1149 deaths and several thousand hospital admissions in Nova Scotia between 1999 and 2003 being estimated to have been caused by excess alcohol use.

I recommend this report to anyone wishing to be informed about alcohol, public health, and public safety in Nova Scotia as well as to anyone wishing to see an example of a careful and thoughtful synthesis of available data on this important topic.

The methods used draw heavily from international recommendations promoted by the World Health Organization. A set of well-thought thorough recommendations for future monitoring of this problem in Nova Scotia is also provided, which I hope will be complemented by similar efforts on the west side of Canada! Too often social and health policy is made without any commitment to accountability and evaluation. This report lays out a blueprint for not only identifying the seriousness of alcohol-related problems, but for monitoring progress in future community responses to these. Much of what works in the way of effective prevention policy in this area has to be implemented locally and regionally. I therefore commend this report to the policy makers of Nova Scotia whether they be from health, policing, road safety, finance, child and welfare, education, or any other sectors impacted in some way by alcohol-related problems and hope that it will help to lay the foundations for effective policies in the years ahead.

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Co-Leader, *British Columbia Mental Health and Addictions Research Network*
Professor, *Department of Psychology, University of Victoria*

Alcohol Indicator Report:
Executive Summary

In this document, the term "Nova Scotians" refers to all Nova Scotians 15 years of age and older, unless otherwise specified.

The Alcohol Indicators Report for Nova Scotia provides a framework for a provincial monitoring system comprised of alcohol indicators that are direct and/or proxy measures of alcohol use and related harms. A major goal in the dissemination of the alcohol indicators report is to inform key stakeholders, at the provincial, regional, municipal, and community levels, of the significant health, economic, and social costs of alcohol-related harms in Nova Scotia and the pressing need to recognize this issue as a priority for action. The report is intended to provide current information to decision-makers in the health, enforcement, education, and alcohol industry sectors, to help target future policies and programs that effectively prevent and/or reduce the harms and consequences associated with alcohol use. The report focuses on the adverse harms of medium to high-risk drinking rather than any potential beneficial effects of low-risk drinking.

The report is framed around the World Health Organization's (WHO) recommendations for alcohol indicators best practices. It includes a brief look at the status of alcohol use in Canada and a comprehensive synopsis of alcohol use in Nova Scotia, largely based on findings from a number of prevalence studies. Using the most recent data sources available, this report includes: estimates for per capita consumption among Nova Scotians aged 15 years and older; patterns of use (never used, former, and current users), high-risk drinking, non-compliance with low-risk drinking guidelines; and alcohol-related harms, including alcohol-related incidents of traffic offences, treatment, morbidity, mortality, and self-reported harm from one's own use and from others' use of alcohol.

Key findings for Nova Scotia

ALCOHOL CONSUMPTION

- For the fiscal period 1999-2004, Nova Scotians consumed, on average, 7.57 litres of pure alcohol per year.
- The Nova Scotian overall consumption of pure alcohol (7.57l) for the fiscal period 1999-2004 was slightly lower than the overall Canadian rate of 7.76 litres for the years 2000-2004.

PATTERNS OF USE

- 74.0 - 80.7% of Nova Scotians are current drinkers, 5.4 - 10.4% have never drank and 13.8 - 16.9% are former drinkers.
- Men (80.5 - 82.9%) are more likely to be current drinkers than women (71.5 - 78.8%).

- Nova Scotians aged 60 years and older (55.5 - 64.7%) were least likely to be current drinkers.
- Adults (25-29 years) had the highest current drinking rates at 90.9 - 91.1% followed by young adults (19-24 years) at 89.2 - 92.3%.
- The average number of drinks consumed for all drinkers at a sitting was 3.2 drinks[A]. Seniors consumed the least at a sitting (1.9 drinks) and young adults the most at 5.5 drinks per sitting.
- 51.7% of students (male and female) in grades 7, 9, 10, and 12 consumed alcohol in 2002.

HEAVY DRINKING

- 3 - 5.8% of Nova Scotians drink heavily every week.
- 17.5 - 20% of Nova Scotians drink heavily at least once a month.
- The rates for heavy drinking are particularly high for underage drinkers, young adults, men, and those who have never been married

HIGH-RISK DRINKING

- 1 in 5 current drinkers or about 117,144 Nova Scotians are high-risk drinkers, meaning they attained a score of 8 or higher on the AUDIT.
- Underage drinkers, young adults aged 19-24, men, and those who have never been married are more likely to be high-risk drinkers as defined by the AUDIT.

LOW-RISK DRINKING GUIDELINES

- In studies conducted in 2003-2004, 3.0 - 17.7% of Nova Scotians exceeded the daily and weekly gender specific low-risk drinking guidelines.
- Among current drinkers in the 2004 Canadian Addiction Survey, young adults had the highest rate of non-compliance with the low-risk drinking guidelines at 49.1%, followed by adolescents 15-18 years old at 26.8%. Noncompliance in the 2003 Nova Scotia Gambling Prevalence Study was reported at 8.1% among young adults aged 19-24 years.

The majority of Nova Scotians drink alcohol. Males and those aged 19 to 29 years have the highest drinking rates, while Nova Scotians aged 60 years and older the lowest. A high percentage of Nova Scotians drink heavily weekly (3 - 5.8%) and monthly (17.5 - 20%). One in 5 current drinkers in Nova Scotia were identified as high-risk for hazardous alcohol consumption, harmful alcohol use patterns and/or alcohol dependence. Underage drinkers, young adults, men, and those who have never been married were most likely to be identified as heavy and/or high-risk drinkers. In addition, 3 - 17.7% of Nova Scotians exceeded the low-risk drinking guidelines for avoidance of acute and chronic alcohol-related harm.

The following alcohol consumption statistics were based on survey estimates. Using survey data, per capita consumption was calculated at 32.1% of the actual rate (2.5 litres of pure alcohol). Therefore when interpreting the following sections it is important to remember that if consumption is severely underestimated using survey data, perhaps patterns of use and harms are also underestimated.

Depending on the data source used, heavy drinking is usually defined as consumption of 5 or more drinks for either sex, or, 5 or more drinks for men and 4 or more drinks for women at a sitting.

The Alcohol Use Disorders Identification Test (AUDIT) is a tool used to identify hazardous consumption, harmful alcohol use patterns, and alcohol dependence.

To avoid acute and chronic alcohol-related harms, low-risk drinking guidelines developed in Ontario recommend that individuals consume no more than two standard drinks per day with weekly limits of 14 standard drinks for men and 9 for women.

[A] A drink in this document refers to a standard drink in Canada which is a beverage containing 13.6 g of pure alcohol. Each of the following is representative of a standard drink containing 13.6 g of alcohol: one bottle or can of beer (12 oz/341 ml of regular strength beer - 5% alcohol), one glass of wine (5 oz/142 ml of wine - 12% alcohol), one drink or cocktail with one and a half ounces of liquor (1.5 oz/43 ml of spirits - 40% alcohol).

Alcohol-related harms

MORBIDITY AND MORTALITY:

- From 1999-2003, approximately 3000 admissions (3 - 3.4% of all admissions) to hospitals in Nova Scotia each year can be attributed to alcohol.
- Alcohol-related male to female admissions were 2:1.
- From 1999-2003, 1149 deaths in Nova Scotia can be attributed to alcohol use.
- Liver disease accounted for 348 alcohol-related deaths (30% of all alcohol-related deaths).
- Alcohol-attributable cancer deaths accounted for 232 deaths (20% of all alcohol-related deaths).
- Deaths from alcohol-related motor vehicle crashes, suicide, and falls accounted for a further 33% of all alcohol-related deaths (382 deaths).
- Alcohol was a factor in 163 motor vehicle fatalities in Nova Scotia between 1999 and 2003.
- In 1999, the ratio of alcohol-related mortality to all-cause mortality was 3.3%. Since then, it has remained stable at 2.8 - 2.9% of all-cause mortality in Nova Scotia.
- An estimated 403 babies born in Nova Scotia between 1999 and 2003 were affected by prenatal exposure to alcohol.

For the five-year period 1999-2003, about 3000 hospital admissions a year can be attributed to alcohol use in Nova Scotia, with men twice as likely as women to be admitted for alcohol use. During the same time period, 1149 deaths can be attributed to alcohol use in Nova Scotia with liver disease, alcohol-related cancers, motor vehicle crashes, suicide, and falls accounting for 83% of all alcohol-related deaths in Nova Scotia.

When interpreting alcohol-related offences data, it is important to note that differences observed in the frequency of alcohol-related offences over time may be a result of changes in enforcement practices rather than alcohol-related behaviours.

ALCOHOL-RELATED OFFENCES

- The Nova Scotia (235) and Canadian rates (242) per 100,000 population for impaired operation of a motor vehicle over 80mg were similar over the five year period 1999-2003.
- During the same period, the incidents of impaired operation of a boat, vessel, or aircraft causing bodily harm of 2.2/100,000 in Nova Scotia were almost double the overall Canadian rate of 1.2/100,000 a year.
- There has been a substantial reduction in incidents of failing or refusing to provide a breath sample over the past 5 years. The

number of actual incidents has decreased from 454 in 1999, to 197 in 2003. This may be due to changes in enforcement practices rather than dramatic changes in behaviour.

- In 2003-2004, 7.5% of Nova Scotians drove a motor vehicle after consuming two or more drinks in the previous hour and 11.5% of Nova Scotians reported being a passenger in a motor vehicle driven by someone under the influence of alcohol.
- Among licensed students, 14.8% reported driving within an hour of consuming two or more drinks and 6.6% of all students regardless of licensing status reported the same behaviour. In addition, 22.8% of students reported being a passenger in a vehicle driven by someone under the influence of alcohol in the prior year.
- There were 366 charges laid pertaining to Section 89 of the Nova Scotia Liquor Control Act, dealing with the sale or serving of alcohol to minors, from 1999-2003.
- In that same period, there were a total of 14,410 offences throughout Nova Scotia under Section 87 of the Nova Scotia Liquor Control Act, pertaining to public intoxication.

The Nova Scotia rate for impaired operation of a motor vehicle over 80mg was 235 per 100,000 population over the five year period 1999-2003. During that same period, the number of incidents of failing or refusing to provide a breath sample decreased from 454 in 1999, to 197 in 2003.

In 2003-2004, 7.5% of Nova Scotians reported driving a motor vehicle after consuming two or more drinks in the previous hour and 11.5% of Nova Scotians reported being a passenger in a motor vehicle driven by someone under the influence of alcohol. In 2002, 6.6% of all students reported driving within an hour of consuming two or more drinks and 22.8% of students reported being a passenger in a vehicle driven by someone under the influence of alcohol.

SELF-REPORTED HARMS

- In 2003-2004, 8.6% (47,871) of current drinkers (15 years of age and older) reported one or more harms from their own use of alcohol.
- Harm from their own drinking impacted most on their physical health, friendships, and social life.
- Nova Scotians who drank heavily once a month or more (consumption of 5 or more drinks for men and 4 or more drinks for women at a sitting) were 7 times more likely than non-heavy drinkers to report one

or more harms from their own use of alcohol, and those who drank heavily every week were 8.5 times more likely to report harms.

- Almost twice as many men (11.4%) than women (5.8%) reported harm from their own use of alcohol.
- In 2003, an estimated 9,378 Nova Scotians aged 19 and older reported they had a problem with the amount of alcohol they consumed or what happens when they drink.
- An estimated 237,270 Nova Scotians 18 years and older have been harmed by another's use of alcohol. The most frequently reported harms were: being insulted or humiliated, being verbally abused, and being involved in a serious argument with a drinker.
- Among students in grades 7, 9, 10 and 12 in Nova Scotia, 30.5% reported experiencing at least one alcohol-related problem (56.0% among current drinkers), with 11% reporting three or more problems.

Many Nova Scotians experience harm from their own use of alcohol (47,871) or from someone else's use of alcohol (237,270). Men and those who drink heavily are much more likely to report harm from their own use of alcohol. Among students in grades 7, 9, 10, and 12 in Nova Scotia, 30.5% reported experiencing at least one alcohol-related problem.

When interpreting alcohol-related treatment statistics, it is important to note that differences observed in treatment rates over time can be impacted by participation as well as changes in capacity (e.g. number of beds available, staffing), admission policies, and public awareness of programs and services. For example, in 2002, the Province of Nova Scotia enhanced prevention and treatment programs and services for youth and women at risk for, and/or experiencing, substance use related problems. Therefore, one might expect an increase in the number of youth and women participating in prevention and treatment programs after 2002.

TREATMENT

- Nova Scotians reporting alcohol use at treatment program intake has increased by 14.7% from 5,883 in 2000 to 6,749 in 2004.
- The ratio of males to females accessing treatment programs is about 3:1.
- The majority of Nova Scotians who seek treatment report multiple substance use (77.1% of women and 71.1% of men).
- One year after receiving treatment, 83.4% report no use or less use of alcohol.
- From 2000 to 2004, adolescents seeking treatment increased steadily: 625 adolescents in 2000 compared to 804 in 2004.
- During that period, the ratio of male to female attendance for adolescents has maintained at approximately 2:1.
- Most adolescents also use other substances, about 23% reported use of one other substance and 71% reported use of two or more drugs.
- One year after treatment, 77.8% of adolescents reported no use or less use of alcohol.

- AUDIT scale scores indicate that among current drinkers 15 years and older in Nova Scotia, 105,880 Nova Scotians may require brief interventions of advice or education and 7,885 may require brief interventions of advice, education, counselling, and follow-up to reduce risks associated with their use of alcohol. A further 3,379 Nova Scotians may require treatment for alcohol dependence.

From 2000 to 2004, Nova Scotia adults reporting alcohol use at treatment program intake increased by 14.7%. Over the same five-year period, the number of adolescents who sought treatment for alcohol use increased steadily. Most Nova Scotians, adults and adolescents, who seek treatment report multiple substance use. After treatment, most attendees reported no or less alcohol use.

Recommendations

Recommendation 1

The findings from Alcohol Indicators Report should be communicated to key decision-makers throughout Nova Scotia.

The Alcohol Indicators Report is a comprehensive synopsis of current alcohol use and related harms in Nova Scotia. The findings from this report should be communicated to key decision-makers at the provincial, regional, municipal, and community levels, in health, enforcement, education, alcohol industry, and other sectors impacted by alcohol-related harms. The information from the report will help inform future policy initiatives and activities targeted at preventing and/or reducing alcohol-related harms.

Recommendation 2

A comprehensive alcohol strategy for Nova Scotia aimed at reducing harmful alcohol use and associated harms should be initiated.

This report should serve as the framework upon which Nova Scotia Health Promotion initiates a comprehensive strategy designed to reduce alcohol-related harms in collaboration with provincial and regional partners and stakeholders. Such a strategy should attend to best practices and incorporate both population health approaches and harm reduction interventions targeted at the most harmful patterns and contexts of alcohol consumption. A population health approach encompasses such policies as alcohol pricing, taxation, and modifying access to alcohol. The strategy should identify harm reduction interventions targeting individuals involved with high-risk drinking patterns (e.g. 5 or more drinks per

drinking occasion) and include recommendations for the prevention of acute harms (e.g. unintentional injuries) while not impacting on any potential health benefits of moderate alcohol consumption.

Recommendation 3

The Alcohol Indicators Report should be repeated in Nova Scotia on a three-to-four year cycle.

The Alcohol Indicators Report should serve as the framework for a provincial monitoring system comprised of alcohol indicators that are direct and/or proxy measures of alcohol use and related harms in Nova Scotia, making it possible to observe trends over time, make comparisons, and measure the impact of policies and strategies. It is recommended that the report be prepared on a three-to-four year cycle.

Recommendation 4

Further research should address the full impact of alcohol-related harms, including the context of high-risk drinking and the cost impact of alcohol on Nova Scotians.

The Alcohol Indictors Report is a significant step towards improving the state of knowledge and understanding about the scope of harms associated with alcohol use in Nova Scotia. The full report identifies a number of opportunities to improve that knowledge, which should be considered in future reports, for example using physician billing to further explore alcohol-related morbidity. Ongoing research could address such gaps as exploring the types of beverages most related to acute and chronic harms in Nova Scotia and exploring the context of alcohol use among those experiencing alcohol-related harms. Finally, the cost impact of alcohol use on Nova Scotians needs to be updated to more accurately reflect the direct and indirect costs associated with harmful use.

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